

# Update



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## **Editorial**

Welcome to this newsletter, which is being circulated to existing PMF 'Friends' - supporters of our local Medical and Health Sciences' Schools in Plymouth - and to those who may be interested in joining the project. The aim of these regular newsletters will be to keep you up to date with the work and achievements of the schools as well as to provide updates about the activities of the Foundation. It would be disingenuous to deny that we are after financial support for the work of these institutions, but we hope that by providing snapshots of their work and its relevance to healthcare, you will be moved to become involved - even if you are not so already.

This newsletter is produced in the shadow of COVID-19. There are many calls on our charitable giving in normal times, let alone in these straitened ones. The pandemic has produced pressing calls for charitable giving to relieve some of the resulting acute hardships. Nobody could possibly argue against such. But this crisis will pass and in time to come the old as well as new, different medical threats will take centre stage once more. Threats which can only be addressed by painstaking, meticulous, scientific effort driven by the best medical scientists and clinicians in the country

Without exception, visitors to the laboratories and teaching facilities at Derriford in Plymouth have been astonished at the range and excellence of the work being conducted. The siting of one of the most modern health research facilities and one of the largest hospitals in the UK (and Europe) on a thriving science park provides the best setting for achieving the great medical science and excellent clinical care we need. It did not happen by accident but is the realisation of a vision driven during the past half century by a number of quiet, visionary leaders and philanthropists. Let us celebrate what has and is being achieved in these 'our' remarkable institutions and do 'our bit' to support them in one of the ways outlined towards the end of this update.

We hope you will find the contents interesting and encouraging, but if you do not wish to receive future editions please contact us at:

[peninsulafoundation@plymouth.ac.uk](mailto:peninsulafoundation@plymouth.ac.uk)

## A Message from the Head of the Peninsula Medical School, Professor Hisham Khalil

It is a great privilege to contribute to this Peninsula Medical Foundation newsletter. The unwavering support of the Friends of the Foundation and their fund-raising activities has played a major role in supporting Cancer Research in Plymouth. The funds that you contribute, by helping us to develop our research capability and capacity, are already making a practical difference to patients' lives. New therapies have already been developed for diseases untreatable to date. During these unprecedented times, the present corona virus pandemic emphasises the importance of quality research and innovation.

There is other practical help that the University of Plymouth has been able to provide. You may have seen how it helped with provision of Personal Protective Equipment using 3-D printing in the Tamar Science Park. Our Researchers are also providing support for a Virtual Hospital Project in University Hospitals Plymouth NHS Trust. The Foundation has played a pivotal role in supporting the school's Medical Education mission, which is to train our medical students to become first-class doctors. Last week, for example, our Year 5 Medical Students took part in an 'Early Graduation'. They will now work as Interim Foundation Year 1 Doctors, which will make available an extra workforce to the NHS for the next 3 months until they start their regular Foundation posts in August. These young professionals now join the fight against an invisible enemy at a very challenging time for the NHS. I am sure you will join me in wishing them well.

## Associate Professor Michael Jarvis



Professor Jarvis' work could not be more relevant at the moment. He is an expert on viruses and more specifically the way in which they move from animal to human hosts. He and his collaborators from across the World have long been searching for a way of dealing with animal viruses which suddenly and with no warning change and are able – just as the present COVID-19 virus has done – to move into humans. It is a fact not widely appreciated, that most infectious diseases affecting humans originate in animals. The COVID-19 virus itself is thought to have originated from a single bat, before doing so. Professor Jarvis' work could enable us to develop novel solutions before such transmissions are made. What follows is a brief exposition of his approach.

It is likely that viruses have been present on earth since life began. Even bacteria are infected by viruses. There are many characteristics which make them so 'successful'. These primitive organisms, which comprise nothing much more than a few strands of DNA & RNA (nucleic acids) wrapped in a coat of fat and proteins, are fascinating entities. They are absolute masters of their own niche in the Tree of Life. COVID-19 itself uses a molecular blueprint, which contains all the information it requires to make new versions of itself. Marvel at the way a virus has evolved over the millennia to insert itself into the specific cells of its animal host in a manner which gives it the ability to survive and spread; its exquisite adaptation. Often, as is presently the case, cells lining the respiratory tract are the target - used both as points of entry and then exploited as factories to produce millions of their brethren. 'Directed' to produce mucus in excessive quantity at the same time, the victims' inflamed tissues react by sneezing and coughing, thereby discharging explosively literally billions of viruses as fine aerosol sprays. And how clever to lie low in the early stages, producing no symptoms but as exemplified by Covid-19, poised ready to spread through a handshake, cough or laugh. Evolution is a truly remarkable process.

Viruses mutate at a rate thousands of times greater than the genetic material of other organisms such as bacteria or animals. This 'instability' increases the chance that a particular virus, confined by its molecular configuration to move

between members of a particular species may experience, at random, a mutation which finds it able to move to another species; in the present case humans. At other times, the virus is genetically poised for such a jump. Patiently biding its time through the millennia, waiting only for the opportunity to move out. An opportunity that may come with a new road being driven through prime, unpeopled tropical forest or, as with COVID, through an animal market in China.

The vulnerability of the virus is that it cannot survive long outside living tissue. Once infected most animal hosts, if they survive, go on to develop immunity and thereby expel the invader. Normally, this immunity also prevents re-infection, although we are uncertain whether this will be the case for COVID-19. The virus thus has a limited time available during which it must move on and spread. If there is sufficient number of non-immune hosts nearby, then no problem. But if not, then a line of transmission is halted as the host develops its immunity which neutralizes and destroys the invader. This is of course, the basis of our present 'lockdown' policy while we wait for the development of an effective vaccine.

There are two ways in which we and other animals develop our immunity. The 'natural' way is through experiencing an infection, which stimulates our immune system to produce specific antibodies (and other material) against that infection, be it viral or bacterial. For example, in days gone by common childhood conditions such as mumps and measles were serious viral diseases which perforce were just left to run their course. Most recovered and were then 'immune' for life. But many did not and some children either died or ended up permanently 'damaged'. During the 18<sup>th</sup> century smallpox was a rampant and deadly disease that infected 80% of the population and killed around 20% whilst leaving those who survived severely disfigured. William Jenner a physician in Gloucester at the time, changed all this by confirming through scientific experimentation that a virus (cowpox) related to smallpox but producing much milder symptoms conferred immunity to both conditions. It is the principle of vaccination, which since the time of Jenner has been applied routinely to a wide range of infectious diseases. Produced in quantity, modified or inactive viruses (and bacteria) are the basis of mass vaccination programmes which produce widespread immunity in the general population. If sufficiently high, in some cases this can bring about the complete extinction of a viral threat. Smallpox and a variety of particularly unpleasant diseases have since been eradicated or controlled in this way and for this we owe a considerable debt to the good Dr. Jenner and his colleagues. Incidentally, Jenner acknowledged at the time that in 1803 the term 'vaccination' was coined by his friend and contemporary, Dr. Richard Dunning, a surgeon practicing in Devonport, Plymouth.

The problem we have at present is with developing, testing, and manufacturing a modified Covid-19 virus in quantities sufficient for a mass immunisation programme. This takes time and thanks to the rapid spread of the strain and its serious consequences we are in a fix. The short-term measures being taken are proving effective in controlling spread. The aim as we all are aware is to buy time while a vaccine is developed, and an extensive testing network is developed to track down and isolate contacts. Both strategies have worked in the past.

Meantime, what can we do in the longer term to make ourselves less vulnerable to these recurrent threats emerging from the animal kingdom? This is where Prof Jarvis' work is so relevant. He reasons that if there is a predictable threat to humans from animal viruses (or bacteria) which from time to time transfer to humans, why not find a way to vaccinate the animals? Viruses could thus be stopped at source before they made the jump into humans. But catching and injecting animals for a mass immunisation programme is clearly impractical and another way must be found. So why not harness and use the remarkable spreading properties of the virus to our advantage? Why not take a modified but still infectious virus – one that would not make the animal hosts particularly ill, but would 'vaccinate' them against the more deadly variety? The modified virus would be introduced to a number of animals through food or contact. It would then spread to other animals in the population. Immunity builds up; deadly virus finds its animal hosts have become immune and eventually it dies out or reduces dramatically. Work is being carried out by Prof Jarvis and colleagues to use a number modified of existing viruses and bacteria to act as the transporter.

Obviously, there are complexities, which are skated over in such a simplistic outline and maybe even confounding factors, but the concept is seductive and is attracting considerable attention. It should be applicable to a wide range of infections, ranging from ones which are troublesome such Bovine TB, through to those which are most horrible and deadly such as Ebola and the present COVID-19. We will keep you posted of any developments.

*Mini Bio: Professor Jarvis is a native borne American who completed his BA (cum laude) at Sanoma State University, California in 1987. before studying in Cambridge for a year. He went on to complete his MA and Doctorate in Biochemistry and in Molecular Biology at the University of California in 1996. He joined Plymouth University in 2012. He works between here and America and his work has spawned several commercial enterprises. If you wish to know more about his work and plans, these can be found at:*

<https://www.plymouth.ac.uk/news/scientists-start-work-on-vaccine-to-prevent-future-coronavirus-outbreaks>

## **Professor David Parkinson, Professor of Neuroscience, Peninsula Medical School: Cancer research**



Prof. Parkinson is one of the leaders of the specialist neurosciences team working on brain tumours. His team works in collaboration with groups both in Plymouth, around Europe and the US. His laboratory and team are part funded by Brain Tumour Research - a kite mark of excellence. They are focusing on two important clinical areas:

- Tumours affecting the nervous system and
- Peripheral nerve regeneration.

He writes:

I will have met many of you when you visited the labs, and if so hello again. Our group is studying two tumour types, meningioma and schwannoma. These are what is described as 'low-grade' in that they are slow growing and do not spread via the blood stream until or unless they become malignant. Using cells from human tumour tissue as well as those from the fruit fly *drosophila* we are trying to understand what causes these slow growths and in time switches them from relatively benign into aggressive, uncontrolled behaviour - 'dysregulation'.

There is a system inside the cell that regulates organ size. It is called the 'Hippo' pathway and is considered one of the fundamental systems in nature. Have you ever stopped to think how the body encourages its parts to increase in size as we all grow up, but then manages to stop them before they 'overgrow'? The Hippo system does just that; it stops the cells growing when the organ of which they form part has reached its optimal size. It is such a fundamental system it is shared widely across the animal kingdom - which is why we can use the fruit fly and more specifically cells from its brain. Genes within the nucleus of a cell control the different aspects of cell function. There are one or two that control the Hippo pathway. If this gene becomes faulty, the pathway fails to work properly, and cell growth spins out of control. Uncontrolled growth is cancer.

We and others are trying to understand what cause the change(s) in the genes; how they affect the 'signalling' pathway, and how they and that pathway can be fixed. Already drugs have been developed which can control some of these malfunctions and are proving effective in controlling certain cancers. More are in the pipeline and if we can understand the signalling process in more detail, we may be able to develop improved methods of controlling or even stopping malfunctions with obvious benefits for controlling or preventing cancer.

Collaborations with both academic research groups and pharmaceutical companies are allowing our group to test new drugs and compounds on the Hippo system both in the laboratory and in living tissue. Preliminary results are excellent. and this work is being expanded to both schwannoma and meningioma tumour models, with a view to progressing any promising agents into clinical trials if possible.

*(ed: why 'Hippo'? It seems someone, somewhere thought that the name of one of the largest space occupying animals, the hippopotamus, was ready made for the science of 'size' control in cell biology. Try that in your pub quiz.)*

Mini Bio: David studied first at Kings College London and went on to complete his PhD at the MRC Clinical Research Centre there in 1989/93. This was followed by a post-doctoral fellowship at the Cancer Research UK, London Research Institute 1993/97. He was a Senior Fellow at University College London before joining

*Plymouth University in 2007. He has two daughters, lives in Plymouth with his family and is a keen cyclist and gig rower.*

## **PMF: Where we are and the way forward**

Dear Friends and Supporters,

Two years ago, we were asked by the Peninsula Medical School to prioritise fund raising for research students' salaries: mainly those studying for a PhD degree. Considering there is a regular flow of Nobel prizes awarded to these young, dedicated scientists, 'Student' seems too small a word! These are the brightest and best of research talent and the powerhouse of research teams everywhere – which is why the Schools are seeking a dramatic expansion. The work is intellectually demanding and requires great stamina. Funding a single PhD student working in one of the laboratories, including material costs, employment costs and a not overgenerous stipend, amounts to £67k for the duration.

Considering the challenge, the Trustees decided that a two-pronged approach is required. The first is to address the immediate need to raise £250k for Brain Tumour research during the next two years. Accordingly, we launched the 'Roger Harris Fund'. Many of you will remember the terrific Gala Night run by Chris Kallis, his colleagues and friends last November. This raised £22,000 towards Brain Tumour research in Plymouth and was a wonderful achievement, which demonstrated the tremendous generosity of individuals and our business community. The Fund now stands at £40k and I am delighted to report that this is already being put to work, with a new PhD student appointed to Professor Hanemann's team last year. Thanks so much to you all for your generosity and hard work.

The second challenge is to address the long-term requirement for a steady flow of funding towards research post salaries and the equipment needed to support them. Accordingly, the Trustees launched 'The Research Excellence Fund' and have set a target of £2m to be raised during the next 4-5 years. We will be talking more about this in the months to come and how, with your help, we plan to achieve it.

A first step taken was to employ a full time Fundraising Manager. We were lucky in finding Nicola Hawkins who brought a huge increase in energy and expertise until she was tragically struck down after a mere ten weeks with us (see her obituary which follows). When the current lockdown eases, the Foundation will make another appointment, but meantime we bow our heads and send our heart felt condolences to Nicola's family, particularly to Nadine, her daughter and Jason her partner.

The need to provide urgent support for the Schools remains as important as ever. You will have had a glimpse of the cracking work being carried out by our dedicated researchers into curing cancer and forestalling pandemics of the kind we are experiencing. Despite the present circumstances, they continue to innovate and are working tirelessly to preserve momentum. Long after the

present crisis has resolved it will be the work of such teams that will keep us and future generations safe. Without exception, they are leaders in their fields and part of global networks that are making a huge contribution to humanity; they surely deserve as much support as we can provide. At the end of this newsletter are some suggestions for how you can provide further help if you wish. Please take a minute to have a look and ponder.....

All the best in these extraordinary and trying times

Denis Wilkins, Chairman, on behalf of the Trustees  
[denis.wilkins@btopenworld.com](mailto:denis.wilkins@btopenworld.com)

## **Obituary: Nicola Hawkins, Exceptional Fundraising Manager**



Tragically, Nicola was taken acutely ill during the weekend of 18/19<sup>th</sup> January 2020 and died on her way to Treliske Hospital at the age of 49 years.

Many of you will have been aware that last year Nicola was appointed to the Foundation's first full-time fundraising post; a significant step on our pathway to increase the level of resources that can be raised and channeled to support the Schools' and their work. Nicola had taken up her appointment in November of the previous year and it quickly became apparent that we had picked ourselves a gem. Highly experienced, professional, enormous fun and energetic she quickly settled in and started taking the practical steps we needed to 'up' our game in the highly competitive world of philanthropic fund raising. It was in many respects a perfect fit for her and the Foundation.

Nicola contracted renal failure at the age of 8 years and was in and out of Guys hospital for much of her childhood where on occasions she and her friend Emily, both hooked up to their respective IVs, could be seen racing down the corridors using their drip stands as scooters. She qualified from Hammersmith and Kensington College and after a spell as a legal secretary found her long-term calling in the fundraising sector. By her early twenties she was forced to start peritoneal dialysis and shortly afterwards in 1992 her mother successfully donated one of her own kidneys and she regained full health. Nicola was an excellent swimmer, and in 1994 and 1995 she competed in the National Transplant Games and gained Silver on both occasions.

Meantime, she had been establishing a solid reputation as an effective fundraiser and was headed hunted by a number of charities including, Help the Aged, Action

for Kids, MS Society and Kidney Care UK as her career progressed. Sadly, her transplant failed after about 13 years and she found herself back on dialysis, which although life saving leaves those affected considerably debilitated. Undaunted and by now moved down to Cornwall, Nicola continued working for Kidney Care and the MS Society; even running her own altruistic training and support group for aspiring Fundraisers. Unfortunately, she had developed antibodies and had only an outside chance of a further kidney match, but one came along in May 2019 and she rapidly regained full health before she was so cruelly struck down.

During her career Nicola was responsible for raising over a million pounds for good causes. Space does not permit more than this brief outline of the life and spirit of a remarkable woman and her achievements. The respect in which a wide circle of friends and colleagues held her is perhaps a more enduring testimony.

### Liskeard Committee of Cancer Research UK (CRUK)

This committee has raised nearly £1m for CRUK. The Foundation and Medical School wondered whether this hardworking group might like a visit to see the type of work that their fund-raising supports. Frances Foulkes, recent past Chair, writes:

“A few months ago the Liskeard Committee of Cancer Research UK (CRUK) was invited to visit the research laboratories at the Peninsula Medical School, Derriford. To explain; our Committee’s role is to raise funds for CRUK. Our main fund raising event is an Annual Exhibition and Sale of Art and Craft in Liskeard in early March when we usually raise about £10,000/£11,000. (We were fortunate this year to have held the Exhibition before the Covid-19 restrictions and despite the difficult circumstances realised £8,000.) CRUK dispenses funds for similar work carried out in laboratories across the country and as we now have topflight facilities locally it was an opportunity to see at first hand the use to which charitable funds such as ours are being put.

Twelve of us, including our Cornwall Area CRUK Fundraising Manager attended. We were very impressed by the location of the Medical School buildings adjacent to the Hospital and surprised to see deer in the wood a few feet from the car park!

Having been made very welcome, and after a pre-tour briefing we were introduced to our hosts, neuroscientists Professor David Parkinson and Dr Claudia Barros. One member of our Committee is a nurse, but the rest of us have no medical or scientific background. Although we do receive regular updates from Cancer Research UK, explaining such technical concepts was clearly going to be something of a challenge. We need not have worried. Donning lab coats, we toured the superb modern laboratories and met a number of (mostly) young researchers. They demonstrated the sophisticated equipment they use and explained the nature of their work, which aims to unravel the myriad causes of cancer and develop new treatments. Their dedication and expertise was impressive, as was the painstaking approach to their work. We were struck in particular by the huge cost of acquiring the equipment and attracting such talented researchers. We left much better informed and encouraged that we

have world-class research such as this being conducted on our doorstep here in Devon and Cornwall.”

*Frances Foulkes, Committee Member*

*(Ed: If a local group wishes to be considered for a tour, we will be delighted to approach the Medical School)*

## How You Can Help

What are the Priorities? While continuing to support many other needs for funding, our current priority is to raise money for research into beating cancer and other unpleasant conditions.

**The Research Excellence Fund** – As you have seen, we have world-class research being conducted in the University and Hospitals. The lifeblood of research is the flow of young scientists just embarking on their post-graduate training in research. These talented young people will go on to be the research ‘stars’ of the future and on their way will make the breakthroughs that are the stuff of future Nobel Prizes. The PMF wishes to raise £2m during the next few years in support of this major appeal. It is the ideal receptacle for substantial donations, which can be named after the donor if so wished. Invested, the interest will be used as an annual endowment. We have made a good start with one generous donor giving £50k and more promised. An extremely worthy cause to consider for a legacy.

### **The Roger Harris Fund for Brain Tumour Research**

Launched in 2019. Roger was a much-respected local businessman who lost his life to a brain tumour. The target is £274,000; enough to fund 100 days of Brain Tumour research. Roger was much loved and did a great deal of charitable work across Devon and Cornwall. Stories told about him are legion. As is so often the case, he was taken when he was in his prime and still had much to give. Today, ten more people in the UK will die from a brain tumour. Sixteen thousand people die annually from this condition which is the commonest cancer related killer in the under 40s. In the Autumn 2019, Chris Kallis and his team conducted a wonderful Gala Night at the New Continental Hotel and thanks to the generosity of the 250 people who attended and several local businesses, £20,000 was raised in one evening! Lockdown permitting, Chris has offered to arrange a similar event this November. To remind readers, in Plymouth we have one of the foremost brain cancer teams not just in the UK’ but in the World! Please help us to realise this ambitious target.

### Practical Steps

**Regular giving:** The PMF and Schools are aware and appreciative that many of you have given and are continuing to do so, but could you do a little more? If you are not signed up to regular gift-aided giving, would a few pounds a month be possible? The additional tax rebate makes a significant difference at no cost to the donor. You then automatically become part of the Friends network.

**Sponsored Activities:** The PMF is asking supporters, long-standing and new, to consider organizing an event or undertaking a sponsored challenge. There is a Just Giving site available and the PMF will help with publicity and advice. When restrictions are lifted, or even beforehand, why not plan a sponsored activity? What about a group/family activity - even something on-line? Sponsored activities also publicise the work of the Medical School. Have some fun while raising funds - no pun intended. After all, if a 77yr old veteran can manage the Land's End to John O'Groats bike ride and raise nearly £5K, then surely, so could you? Think of the warm glow of achievement and the kudos which ensues. (As the blisters and aches subside, that is).

Please get in touch with any ideas/plans and if you need help with publicity or advice, we will do our best to help.

**A bequest:** None of us like to contemplate our own passing, particularly at this torrid time. But if you are making or revising your will, a legacy in your memory - or that of a loved one - may be worth considering. Please drop us a line if you wish to consider this.

**Friends' Scheme:** The Friends of PMF are like minded individuals committed to supporting research and medical excellence in Plymouth. It is the intention to build a 'Family' of interested supporters to take a special interest in the activities and progress of the Schools comprising the University Faculty of Health. By donating you will automatically be enrolled unless you stipulate otherwise (see the donation form). In this way, the PMF can keep you informed of activities, achievements and plans. In due course we will be putting on Friends' events such as lectures, receptions and showcases.

Other Funds that may be of interest:

#### Equipment Fund

The cancer researchers are in urgent need a Proteomic Analyser. This piece of equipment will cost £500k, approximately half of which has already been raised. It will massively increase the rate at which research by all the teams in the Schools can be conducted and will replace equipment, which is nearing the end of its life. Donations large and small would be gratefully received. Smaller items are always required and can be named after the donor.

#### Student Bursaries

The Foundation continues to fund bursaries and grants for University of Plymouth medical students. We want the very brightest students studying at the medical school - regardless of means. Financial support helps to make this possible, so thanks must go to all those who so generously support bursaries and grants.

A £3 - 5,000 bursary dispensed annually over the duration of an undergraduate course can make the difference between a student having to withdraw and being able to continue and maintain reasonable access to learning material and accommodation. One local student, Philip, told us, "As I grew up near Newton

Abbott and had to self-fund the course, there wasn't much question of studying anywhere else but Plymouth. I have been able to buy the textbooks I needed - from paediatrics to palliative care - as well as fund my online short medical courses. I wouldn't have been able to do this without the extra help from the bursary."

If so wished and funded in whole it can be named after the donor or in memory of a loved one. Donations do not have to be paid as a lump sum but can be spread over the duration of training through regular payments. How about considering a named group or company sponsorship? Please get in touch and we can discuss options.

Attached to this newsletter is a donation form that will help us direct any donation you feel you can make. To emphasise, modest, regular monthly donation of £10 - 20/month, especially if gift-aided, provides a steady income which the PMF can direct towards where it is most needed. In signing up you automatically join the PMF Friends' Scheme.

Thank you all again for your support and keep in touch.

If you wish to contact us please do so by email at:

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