Wessex Medical Research

Funding research to fight disease

The newsletter of WESSEX MEDICAL TRUST

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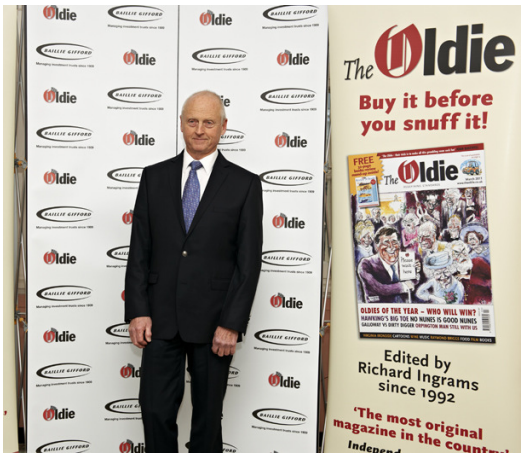
In this issue:

Order placed for Mass spectrometer



We are very pleased to be able to report that an order has now been placed for a new mass spectrometer which will greatly enhance the vital work being undertaken by Professor Paul Townsend and his team at Southampton researching into early biomarkers for Breast, Prostate and Ovarian cancers. Last time, we congratulated retired cardiovascular surgeon Roger Allsopp who successfully completed another Channel swim in August 2011 and in the process, secured the accolade, at the age of seventy years and four months, of being the oldest person to achieve this feat. The donations received by Roger, either directly or through the JustGiving website, now total over £108,000. An extremely generous personal donation of £250,000 by Derek Coates, owner of Healthspan in Guernsey, and further monies raised by the tireless efforts of the volunteer fundraisers on Guernsey have meant that the fundraising target has been reached and the new machine is due to be delivered this Spring. For those interested in the technical detail, Paul Townsend has provided a useful summary on *Page 3*.

As well as having the satisfaction of seeing his project come to fruition, Roger has also been the recipient of a number of awards, probably the most impressive of which to date has been the one presented to him by Sir Terry Wogan at the Oldie of the Year Awards ceremony in London late in 2011.

Visit our updated website

We have updated–and hopefully improved–our website. Please take a few moments to have a look. It's on the same "address" as previously:

www.wesmed.org.uk

In line with most charitable websites, we have now made a major feature of the easy way to make a donation to our funds. As always, we do need a continuous inflow of money to be able to continue the vital work we undertake in supporting medical research in the Wessex Region. Please take the opportunity to visit the site and make a donation–no matter how large or small, but please do it **NOW!** Thank you.

*AND please "**LIKE**" our Facebook page at "**Wessex Medical Research**"*

Institute for Life Sciences Grant 2011

Dr Ali Tavassoli

obtained his first degree at the University of Bristol and followed this with a PhD at Reading, post doctoral research at the University of Sussex and a fellowship in chemical biology at the Pennsylvania State University, USA.

The new Institute for Life Sciences at Southampton has been set up to further the objective of blending various areas of scientific expertise to advance the scope of research in this important area. The Institute was formally opened by Lord Robert Winston in September 2011. On that occasion, it was announced that Wessex Medical Research had provided a special PhD grant to mark the inauguration. This was for a sum of £80,000 spread over four years. The supervisor for the project is Dr Ali Tavassoli from the School of Chemistry and the PhD student, Jamie Townend, started her research work in October 2011. The title of the research is *"Direct stem cell fate with chemical modulators of protein networks"* and a brief synopsis of the objectives is set out below.

The overall aim of the research is to understand and inhibit changes in the cellular protein network that trigger the onset of diseases such as cancer. By developing molecules that inhibit these changes, the earliest signal for the onset of disease is eliminated, thus targeting the cause of a disease, rather than just its symptoms. The research is taking place in three main areas:

1. *Tumour Hypoxia—that is, lack of oxygen.* All tumours are hypoxic; because of their rapid growth, the surrounding blood vessels are unable to supply enough oxygen (foetal cells are also hypoxic at certain times during their development). The aim of this project, which is sponsored by Cancer Research UK, is to break up the interaction of the protein involved in responding to low oxygen signals, therefore preventing the formation of new blood vessels around a tumour, thus cutting off its oxygen supply and preventing further growth.
2. *Selectively activating the cellular low-energy sensor.* In every cell, there is a sensor that monitors energy (ATP) levels and this shuts down processes associated with cell division and growth upon detection of low energy levels. The intention here is to develop a molecular activator of this sensor with a view to tricking the cancer cell into believing it has run out of energy, so it will halt cell division and growth.
3. *Understanding the role of the protein networks that direct stem cell fate.* Stem cells are unique, in that they can transform into any other type of cell. This process, called "differentiation", is thought to be controlled through a series of interacting proteins. This project aims to develop molecules that selectively disrupt individual protein-interactions within this network. Thus compounds will allow a better understanding of the networks that control stem cell fate and may have potential uses in regenerative medicine.

Item 3 is the basis of the research now being undertaken by Jamie Townend.

Skydive for Medical Research

Laura Smith, who is the administrator in the WMR office, is planning to make a Skydive over Salisbury in aid of medical research. The likely date for the Skydive is late October and, with your support, she hopes to raise a considerable sum for Brain Injury Research. More details will be given in our Autumn Newsletter as well as on our Facebook page and Website: *www.wesmed.org.uk*

E mail addresses

We have in the past attempted to create a formal list of email addresses for our supporters. For various reasons–mainly staff changes and office moves–the list we created has not survived. However, particularly as the cost of postage has increased, and is set to increase substantially again in the near future, we are having another serious effort on this front. Therefore, we should be very grateful if everyone who reads this Newsletter would email to us their preferred email address on *wendy.burchall@wesmed.org.uk*. We promise not to swamp you with 'junk mail' but we would hope that you will be agreeable to receiving from us the regular Newsletters and also notifications of events being organised by WMR or one of its volunteer committees and other matters regarding WMR which may be of interest to you. We will certainly not pass your details to any third party.

Thank you for your co-operation and we look forward to hearing from you–*by email, please!*

Details of the mass spectrometer

Professor Paul Townsend (pictured) has provided us with the following summary of the work to be undertaken by the mass spectrometer we are sourcing:

The recently ordered mass spectrometer, together with a further machine being provided by the University of Southampton, will have a major impact on the research that can be performed at Southampton, providing state-of-the-art technology to enable the discovery of new disease biomarkers for prediction and disease stratification. The two instruments selected are complementary to each other, maximizing the information that can be obtained from valuable samples. The two instrument platforms selected are:

Thermo Scientific Orbitrap Elite *(being provided through Wessex Medical Research)*

The Orbitrap Elite hybrid mass spectrometer integrates a faster, more sensitive ion trap, the Velos Pro, with the new high-field Orbitrap. This is coupled to an on-line two-dimensional ultra-performance nano-liquid chromatography system, allowing powerful, orthogonal separations to be performed prior to mass spectrometry. The new high-field Orbitrap brings ultrahigh resolution (>240,000), improving spectral quality and allowing a wide variety of experiments from in-depth discovery based experiments to comprehensive qualitative and quantitative experiments. The increased acquisition speed, sensitivity and dynamic range will enable deeper mining of complex samples, even at low concentrations. The availability of different types of fragmentation techniques will provide more confident assignment of challenging samples.

Waters Synapt G2 HDMS and UPLC; and MALDI ionization source
(being provided by the University of Southampton)

The Waters SYNAPT G2-S mass spectrometer is a high-resolution exact mass MS/MS platform. This is combined with a nanoUPLC system for on-line separations of complex samples. The mass spectrometer incorporates new innovations: StepWave ion optics; Quantitative Tof; Ion mobility; and the unbiased acquisition mode MS^E. These features bring a significant increase in sensitivity, selectivity and analytical peak capacity. This will allow the identification and quantitation of sample components at much lower concentrations than previously achievable, revealing details about complex samples that were previously difficult or impossible to obtain. The addition of the MALDI ionization source will facilitate the imaging of thin tissue sections, providing spatial distribution of peptides, proteins, drugs and metabolites.

Recycle 4 Charity.co.uk

For over a year now, we have been promoting the idea of recycling used mobile phones and printer cartridges for the benefit of WMR. This is an ongoing appeal so please dig around and see what you can find. You can either send them direct to recycle4charity (go to their website as above for freepost instructions–but remember to tell them it's for the benefit of Wessex Medical Research and give our reference number C16805) or call the office for a freepost envelope.

We are proud to be a member of the Association of Medical Research Charities and are pleased to report that we successfully passed the AMRC 2011 peer review audit.

amrc
ASSOCIATION OF MEDICAL RESEARCH CHARITIES

amrc
PEER REVIEW AUDIT 2011

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Events, events

In the autumn, Salisbury Volunteer Group held a speaker Supper. Guest speaker on that occasion was Professor Tim Elliott, Associate Dean for Research in the Faculty of Medicine at Southampton University who gave a wide ranging review of the various areas of medical research currently being undertaken. The aim of the evening was to raise awareness of WMR in the area. Separately, a Quiz-and-Chips evening in February raised a handsome £1,500.

March saw another successful Quiz-and-Chips evening organised by the Romsey Volunteer Group at the Dr Peter Centre in the town. Gillie and Norman Oldmeadow acted as quizmasters and over 50 supporters enjoyed a convivial evening pitting their wits whilst raising valuable funds for medical research.

Dates for your Diary

2012

April 21	Jazz Evening *Salisbury*
April 22	London Marathon
April 22	Thai Banquet *Winchester*
April 28	Cliff Walk *Guernsey*
June 14	Coffee Morning *Romsey*
June 15	Sultan Show *Gosport & Lee*
June 24	Strawberry Tea *New Forest*
July 21	Skittles in the Garden *Romsey*
September 1	Hog Roast *Gosport & Lee*
September 13	Ladies Night *Romsey & Winchester*

2013

April 6	London Welsh Male Voice Choir Concert *New Forest*

Please check the website for additional activities and give us your active support wherever you can.