UK Charity funding supports Sunderland drug research into rare genetic disease

Pharmaceutical scientists at the University of Sunderland have been awarded £125,000 by Cystinosis Foundation (CF) UK to fund the next stage of their research into rare genetic disease.

The funding will support research which evaluates whether prodrugs, intended to drastically improve the current treatment of cystinosis, could work effectively on patients. There is currently no cure for cystinosis, which occurs when the body is unable to process cystine (an amino acid) in cells because the natural system is malfunctioning, as a result the cystine crystallises in cells leading to kidney problems and eventually affecting other organs.

Currently, cystinosis is treated with the active ingredient Cysteamine, in a product called Cystagon®; however, this produces unpleasant side effects, such as nausea, vomiting, halitosis, body odour and a noxious taste. A large dose of the drug is required four times a day, as up to 70 per cent is wasted through the body’s metabolism during digestion and absorption, with no therapeutic benefit.

But with ongoing support from (CF) UK, the Sunderland university team has been able to design prodrugs to take the effective treatment directly to the cells that need it, improve its absorption and reduce the unpleasant side effects. The new funding stream will support tests to discover the effectiveness of the prodrugs in treating cystinosis.

Professor Roz Anderson, who heads up the team of pharmaceutical scientists, Dr Lisa Frost, Paul Hambleton and Dr Hamde Nazar, at the University, said: “Lisa’s initial tests have shown that these prodrugs have the potential not only to produce the required therapeutic effects, but also to reduce the side effects and improve the patient experience. This new financial support will allow us to work with clinicians and industrial collaborators in Europe to investigate the prodrugs for their potential to progress to patient use.”

Also supporting Prof Anderson and the team of pharmaceutical scientists to carry out a comprehensive three-year study into the disease using the latest research techniques is US charity, the Cystinosis Research Network (CRN).

Research Beacon contacts

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Drug Discovery and Application research:
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In Profile: New Research Beacon member

Dr Jane Carr-Wilkinson, Senior Lecturer, Dept of Pharmacy, Health and Well-Being

I obtained my PhD from Newcastle University in 2008, this involved studying the role of p53 tumour suppressor gene pathway in relapsed neuroblastoma. Following my PhD my research interests were primarily focussed towards understanding the genes and signalling networks involved in childhood cancer development and its progression. This involves using stem cells to study neural crest and sympathetic neuronal development under physiological conditions to understand more about the pathogenesis of neuroblastoma and other neural crest disorders. I have set up collaborations and worked with stem cell experts at John’s Hopkins University in Baltimore to study the survival, integration and migration of neural crest cells derived from stem cells into host tissues. This work provides novel insights into disease development to facilitate the discovery of new biomarkers and targets for novel therapeutic intervention.

Email: Jane.Carr-Wilkinson@sunderland.ac.uk

Spotlight on: Yitka Graham PhD student

Obesity and weight loss

Yitka Graham, PhD Student under the supervision of Prof Ann Crosland and Dr Jonathan Ling, Dept of Pharmacy, Health and Well-being

Obesity is a global health concern, with an estimated 500 million obese adults world-wide. Bariatric surgery is a growing intervention for obesity, offering an effective and sustainable weight-loss option, which also demonstrates favourable improvements on obesity-related comorbidities such as Type 2 diabetes. However, surgery imposes permanent physiological changes to a person’s digestive system, requiring lifelong adaptation which impacts on their everyday lives, especially establishing new approaches to eating. Successful bariatric surgery is measured not only on weight loss and comorbidity resolution, but also on improved quality of life, which may be affected by surgery. My research, in collaboration with City Hospitals Sunderland, will explore how obese adults, who choose bariatric surgery as a weight-loss intervention, adjust to lifestyle changes in the first two years post-surgically. My research project was inspired by my interests in bariatric and metabolic surgery, obesity and other endocrine disorders. I am particularly interested in the patient perspective of living with endocrine or long term chronic diseases. I am a member of the British Obesity and Metabolic Surgery Society, The American Society for Metabolic and Bariatric Surgery and The Obesity Society. Email: yitka.graham@research.sunderland.ac.uk

In Profile: Hoda Javaheri, new Beacon PhD student

Hoda Javaheri, PhD student under the supervision of Dr. Amal Ali Elkordy and Dr. Paul Carter, Dept of Pharmacy, Health and Well-being

I am currently a PhD student in the field of pharmaceutics. My interest in pharmaceutics developed during my final undergraduate year in pharmacy. It is amazing how a pharmacist can have an impact on discovering and improving drug delivery systems. My main area of research is the delivery of small and large molecules; basically, improving the dissolution of poorly water soluble drugs via a new technique known as the liquisolid compact system. Formulating hydrophobic drugs into a more appropriate dosage form, to enhance drug low solubility, is very challenging and many techniques have been used in different studies to improve this problem. Liquisolid system is where a liquid medication can be used (i.e. solid drugs dispersed in non-volatile liquids). During my research, I will be looking into formulating parenteral cytotoxic drug into oral form with a greater concern on the bioavailability and permeability in the body by using the above technique. Therefore, an intensive study of the cytotoxic drug characteristics and site of action is required during my research. Further on, the same polymers, used for the oral delivery, will be used in the second part of my research, which is gene therapy/delivery in treating certain cancers. I am looking forward to continuing and exploring new results throughout the coming years of my PhD.

Email: ha5hja@student.sunderland.ac.uk
UPCOMING EVENTS

Seminar: Wednesday 5 June at 5.15pm in DAL 007, Sciences Complex
“Stillbirth and Stigma: The Spoiling and Repair of Multiple Social Identities”
Dr Rosalind Crawley, Dept of Psychology and Dr Lyn Brierley-Jones, Dept of Pharmacy, Health and Well-being

Upcoming seminars this summer will include a variety of stimulating and diverse speakers and topics around the five research themes of the Beacon. Seminars are open to all and refreshments are served.
Please check Beacon website for up to date seminar schedule: www.sunderland.ac.uk/beacon-hsw

Research Funding Sandpit: Friday June 28, 2013 from 1pm to 5pm, Gateway 1, City Campus
As part of the HSWB Research Beacon development programme, this research sandpit is part of a series of events to support staff in understanding and being able to apply for external funding. In this research sandpit event, teams of staff will each put together a research proposal and receive feedback from an expert panel. Prizes of research funding will be awarded.
RSVP to glenda.young@sunderland.ac.uk.

Qualitative Methods Workshops — ongoing
Dr Lyn Brierley-Jones, Research Beacon Fellow, runs a series of research workshops on how to conduct qualitative research effectively and analyse the data. These workshops are open to staff and research students in the HSWB Beacon. Workshops which have taken place this year so far include Qualitative Research Methods - analysing qualitative data and conducting qualitative interviews. Future workshops will include facilitating focus groups and writing for publication.
Please email Lyn for further information or to book a place: lyn.brierley-jones@sunderland.ac.uk

REPORT FROM Research Beacon Theme Leads Event, held February 2013
This event included discussion on what the Research Beacon is; how the Research Beacon can support FAS research active staff; how the Research Beacon can help fund research projects with an explanation of the Beacon funding application process along with how to understand and become involved in Beacon research themes. The lunchtime event provided an informal environment that was both supportive and enjoyable. It will lead to more events for Beacon members to enhance our research environment where ideas for funding bids, publications, conferences and general innovation can be shared and supported.

REPORT FROM Funding Event: NIHR RfPB funding - perspectives from the Chair, held April 2013
Dr Scott Wilkes, Chair of NIHR Research for Patient Benefits (RfPB) North-East, gave a presentation at the University of Sunderland at the invitation of the HSWB Research Beacon. Scott is the Clinical Lead, PCRN Northern & Yorkshire Primary Care Lead NTW CLRN Executive GP/Honorary Clinical Senior Lecturer at Newcastle University. Scott spoke to Faculty staff and research students about the NIHR RfPB funding stream. He presented data that reflects the investment made in the academic economy of the North East and gave insights into what makes a good RfPB application.

Research Beacon Publications
January 2013 — May 2013

JOURNAL PUBLICATIONS
PUBLICATIONS (CONTINUED FROM PREVIOUS PAGE)


OTHER PUBLICATIONS


CONFERENCES PAPERS