Media Information

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Microcrystals promise major medical benefits

A new technology being developed in Scotland could transform the treatment of many diseases by enabling protein medicines that currently need to be injected, to be taken with an inhaler. Recognising the importance of this breakthrough, Dr Marie Claire Parker of XstalBio Ltd, a University of Glasgow and University of Strathclyde spin-out company, is to be presented tomorrow with the nation's top award for innovation - the Gannochy Trust Innovation Award of the Royal Society of Edinburgh (RSE).

Entitled "Protein-coated Microcrystal (PCMC) Technology", Dr Parker's new process can attach proteins such as insulin to crystals that are so tiny (between one and five thousandth of a millimetre) that they can be inhaled, allowing the drug to enter the body via the lung. Whilst it must be emphasised that the technology is still to be clinically-tested, it could enable some people with certain types of diabetes, to avoid inconvenient, painful injections by taking their medicine with an inhaler. This technology is therefore likely to increase the consistency of the medicine being taken and so improve control of blood-sugar levels. Protein and peptide drugs, so called biopharmaceuticals normally have to be injected because in pill form they are destroyed in the gut by the body's own naturally-occurring acids. There are believed to be over 200,000 people in Scotland with diabetes and numbers are predicted to increase dramatically[1*]. The World Health Organization states that at least 171 million people worldwide have diabetes and estimates that this figure is likely to more than double by 2030 to reach 366 million[2*].

PCMC Technology has the potential to create a new generation of therapeutic drugs and therapeutic vaccines that would significantly improve the treatment of chronic and acute diseases in Scotland and around the World. Because the crystals engineered by Dr Parker are stable at temperatures as high as 40 degrees centigrade, the technology could be of particular benefit to people in countries where refrigeration of medicines is difficult. XstalBio Ltd recently signed a licensing agreement with Europe's largest manufacturer of therapeutic proteins, Boehringer Ingelheim. One outcome of this agreement will be the construction of a GMP manufacturing plant capable of producing large quantities of sterile PCMC suitable for clinical trials The company has also entered into a collaboration with Avecia to develop vaccines that can be used to combat bioterrorism. Dr Parker has so far focused on healthcare and in particular formulation and drug-delivery but the innovation also has applications in a wide range of other areas, including diagnostics and cosmetics.

The Gannochy Trust Innovation Award of the Royal Society of Edinburgh (RSE)[2*] has been created

to encourage and reward Scotland's young innovators for work which benefits Scotland's
wellbeing. This coveted title, which also carries a cheque for £50, 000 and a specially commissioned gold medal, will be bestowed upon Dr Parker by the President of the Royal
Society of Edinburgh (RSE), Sir Michael Atiyah on Friday 27th October. Dr Parker plans to use the £50, 000 award to help develop the manufacturing process of stable, cost-effective vaccines and the advancement of a high quality biotechnology manufacturing company in Scotland, boosting our economy.
[1*]Source: *Diabetes in Scotland (NHS Scotland)* [2*]Source:
http://www.who.int/diabetes/en/

Reacting to the announcement, Dr Parker said:

> *I am delighted and exceptionally honoured to receive what is a highly prestigious award; The Gannochy Trust Innovation Award of the Royal Society of Edinburgh for 2006. The award will provide a wonderful mark of recognition for the PCMC Technology, both for myself and XstalBio, not only in Scotland but also globally. With this award we intend to develop our manufacturing process further for the cost effective and efficient production of stabilised vaccines and to continue to market the technology globally.*

RSE President, Sir Michael Atiyah said:

> *This innovation has the potential to transform the treatment of many diseases. If clinical trials prove successful, this technology could improve the quality of life of many and save countless lives by enabling vaccines to be provided in countries where refrigeration is difficult. I am delighted that, as a result of the Gannochy Trust's generous support, we are able to recognise Dr Parker's achievement. I offer my congratulations to Dr Parker and commend her ingenuity, dedication and hard work.*

The Gannochy Trust's Chairman, Dr Russell Leather said:

> *The Gannochy Trust recognises the enormous potential of Dr Parker's innovation to offer very significant healthcare benefits to people in Scotland and abroad. I am delighted that we can support and encourage the best of our young innovators through this partnership with the RSE. I wish Dr Parker and her colleagues every success in transforming their technology into life enhancing and life saving medicines.*

Notes for Editors:

A. Biographical Details ~ Dr Marie Claire Parker

Dr Parker was born in Glasgow and obtained a BSc.and Ph.D in Chemistry from the University of Strathclyde. She worked as a Post-doctoral Fellow in Nottingham and La Rochelle, France before returning to take up a prestigious BBSRC David Phillips Research Fellowship, based initially in The University of Edinburgh and subsequently at The University of Glasgow. Here, Dr Parker began the work on protein coated

microcrystals in collaboration with Dr Barry D. Moore from University of Strathclyde leading to an initial patent filing in 1999. A Scottish Enterprise Proof of Concept Award was obtained to develop the technology and this was followed by the award of an RSE/Scottish Enterprise Enterprise Fellowship to Dr Parker to commercialise the innovation. A spin-out company, XstalBio Ltd, was incorporated in 2002 and patents put in place to cover the pharmaceutical applications of PCMC. The company obtained an exclusive license to the technology from the Universities of Strathclyde and Glasgow in 2004. Dr Parker is currently full-time CEO of XstalBio (www.xstalbio.com) and is aiming to develop it into an internationally leading company in the formulation and delivery of biopharmaceuticals.. XstalBio received a SMART Award in 2005 to support development of a novel continuous manufacturing process.

B. [2*]The Gannochy Trust Innovation Award of the Royal Society of Edinburgh

The Gannochy Trust Innovation Award of the Royal Society of Edinburgh is Scotland's highest accolade for individual achievement in innovation and has been being created to encourage and reward Scotland's young innovators for work which benefits Scotland's wellbeing. The Award was presented for the first time in 2003 to Dr Barbara Spruce, Department of Surgery and Molecular Oncology, University of Dundee, for her innovative technology for the treatment of cancer. The 2004 Winner was Professor Ian Underwood, FRSE, whose research and innovation led to the creation in Scotland of a world record-breaking technology – an ultra-miniature television-quality display built on a silicon chip. In 2005 the award was presented to Mr John Harrison who developed a unique chemical technology that can effectively dissolve oil in water and vice versa, enabling pollution such as oil-contaminated wastes to be cleaned up and the detergents recycled.

The award is presented annually to a young innovator whose work has potential to promote social and economic well-being. Established in partnership between The Gannochy Trust and The Royal Society of Edinburgh, the purpose of the new award is to encourage younger people to pursue careers in fields of research which promote Scotland's inventiveness internationally, and to recognise outstanding individual achievement which contributes to the common good of Scotland. The prestigious award also seeks to promote Scotland's research and development capability in new technologies and areas of social importance. Targeted at a new generation of Scottish innovator, any individual aged 45 or under working in Scotland is eligible to compete for the award. Competition entries from fields of research and development which have demonstrable potential to benefit Scotland's social or economic wellbeing, have been sought. Funded by The Gannochy Trust, the Award is administered by The Royal Society of Edinburgh.

C. Photographs

A j.pg is now available of Dr Parker from the RSE upon request. A number of J.pgs will be available from Photographer, Gary Doak from the evening of 27 October 2006 (mob: 07836 255 728). Images available: Presentation Ceremony; Individual Head and shoulder shots of The Winner; The President of the RSE, Sir Michael Atiyah; The Chairman of The Gannochy Trust, Dr Russell Leather.

D. Video Footage

Beta copies of video featuring the winner, Dr Parker, explaining her work and its importance, are available from Stuart Brown at The Royal Society of Edinburgh (contacts
below).

E. The Royal Society of Edinburgh (RSE)

The Royal Society of Edinburgh (RSE) is Scotland's National Academy. A wholly independent, non party-political body with charitable status, the RSE is a knowledge resource for the people of Scotland. Organising conferences and lectures both for the specialist and for the general public, the RSE is a forum for informed debate on issues of national and international importance. The Society draws upon the expertise of its multidisciplinary fellowship of men and women of international standing, to provide independent, expert advice to key decision making bodies, including Government and Parliament. Strengthening links between academia and industry and boosting wealth generation at home, the Society's Research Awards programme annually awards over £1.7 million pounds to exceptionally talented young academics and potential entrepreneurs. Today, operating a successful programme of inspiring lectures and hands-on workshops for primary
and secondary school pupils, the RSE is also active in classrooms from the Borders to the Northern
Isles. The multidisciplinary membership of the RSE makes it unique amongst learned Societies in
Great Britain. Its peer-elected fellowship encompasses excellence in the Sciences, Arts, Humanities,
the Professions, Industry and Commerce. Born out of the intellectual ferment of the Scottish
Enlightenment, the RSE was founded in 1783 by Royal Charter for the "advancement of learning and useful knowledge". A progressive Scottish Society, working as part of the UK and within a global context, the Royal Society of Edinburgh is committed to the future of Scotland's social, economic and cultural well-being. The RSE is Scottish Charity No. SC000470. www.royalsoced.org.uk

F. The Gannochy Trust

The Gannochy Trust is a grant-making Trust based in Perth, which makes donations to charities
in Scotland, with a preference for Perth and its environs. The Trust was founded in 1937 by
Arthur Kinmond Bell, whisky distiller and philanthropist, who had previously built a model

housing estate of 150 houses in Perth. In recent years the Trustees have enlarged the estate with a further 63 sheltered houses, which they maintain and administer, in addition to farms, recreation grounds and other properties. A number of civic, recreational and social projects in Perth bear witness to major charitable support from the Trust. In addition, many small charities in Perth receive regular donations. Other charitable organisations, large and small throughout Scotland, have been the recipients of donations from the Trust.

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