The Royal Society of Edinburgh

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Media Information

Marine Biotechnology Pioneer may turn tide of MRSA

New antibiotics to fight hospital-acquired infections such as MRSA and *C. Difficile* may come from the sea. This Scottish-based research is just one of the promising developments and achievements in combating chronic multi-drug resistant infections that has won marine biotechnology pioneer Dr Andrew Mearns Spragg the nation's top award for innovation. Dr Spragg (35), the CEO and Founder of Oban-based company Aquapharm Biodiscovery Limited received the 2007 Gannochy Trust Innovation Award of The Royal Society of Edinburgh on 26 October 2007. Whilst it must be emphasised that the technology requires further development, this Award recognises the potential of Aquapharm's new antibiotic compound, P-216CM that was isolated from a new species of marine micro-organism. Preliminary results have demonstrated strong antibacterial properties towards MRSA, with "proof of concept" efficacy studies showing the ability of the molecule to reduce Staphylococcal infection caused by bacteria.

Carrying a prize of £50,000 and a specially commissioned gold medal, The Gannochy Trust Innovation Award of the Royal Society of Edinburgh (RSE)[1*] has been created to encourage and reward Scotland's young innovators for work which benefits Scotland's wellbeing. The award was presented to Dr Spragg at a prestigious awards ceremony at The Royal Museum of Scotland by Gannochy Trust Chairman, Dr Russell Leather and RSE President, Sir Michael Atiyah. Dr Spragg plans to use the £50,000 to conduct stringent experiments designed to gauge the full potential of the P-216CM molecule and to help to secure co-development partners.

RSE President, Sir Michael Atiyah said:

> *This marine biotechnology has the potential to make an important contribution to the fight against* hospital-acquired infections such as MRSA.
>
> *If further development of these* antibiotic compounds *proves successful, this innovation could save many lives. I am delighted that, as a result of the Gannochy Trust's generous support, we are able to recognise Dr* Spragg's *achievement. I offer my congratulations to Dr Spragg and commend his drive, dedication and hard work.*

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

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

Dr Spragg reacted to the announcement:

One of the highlights of my career, I am honoured to have been chosen as the recipient of this year's highly prestigious Gannochy Trust Innovation Award of the Royal Society of Edinburgh and thank all concerned. The accolade recognises almost a decade of work and will further enhance the commercial credibility of marine biotechnology. Such achievements would not have been possible without the support of a strong and committed team within Aquapharm. It is inspiring to receive this recognition and we shall remain dedicated to developing what is an exciting new area of commercial research and to realising the true potential of this technology in pharmaceutical applications.

Notes for Editors:

Background

Andrew Mearns Spragg founded and set up Aquapharm Biodiscovery Limited, following an RSE/Scottish Enterprise Research Fellowship awarded in 2000. Now based at the European Centre for Marine Biotechnology, Oban, Argyll, Aquapharm is the first UK company dedicated to natural product discovery from the, as yet, untapped microbial resource of the sea and from which innovations are expected to be of significant economic benefit to the Scottish and global biotechnology sector. Aquapharm's focus is to isolate and develop new antibiotics active against multi drug resistant organisms, such as MRSA & *C difficile* and active ingredients for food and cosmetic applications.

In 2004, on securing a first round investment of £1.25m, Aquapharm was the first company to locate its business at the European Centre for Marine Biotechnology (ECMB) near Oban on the west coast of Scotland.

In July 2007 Aquapharm closed its second round funding deal of £4m. The company has increased its work force from an initial 3 staff in 2004 to over 15 scientists in 2007, including molecular and microbiologists, cell biologists and natural product chemists.

Aquapharm indicate that the potential of Marine Biotechnology to deliver a new pipeline of antimicrobial drugs is enormous. So far more than 61% of the 877 small molecule new chemical entities (NCEs) introduced between 1981 and 2002 originated from natural products. In the area of anti-infectives alone, there are 4 natural products with annual sales over $1 billion — Augmentin®, Zithromax®, Biaxin® and Rocephin®. However, the rate of new natural products discovered from land based organisms is slowing, and scientists around the world have recognised the importance of the marine environment for the provision of new biological diversity that vastly outnumbers the species diversity of land based organisms. Already, marine organisms are yielding exciting drug prospects as research has shown a wide variety of new chemical entities of pharmaceutical potential. Molecules derived from marine organisms are already showing novel pharmaceutical potential. For example, the compound Ecteinascidin-743, isolated by the Spanish company Pharmamar derived from the tunicate, *Ecteinascidia turbinate*, has been shown to exhibit potent anti-tumour activity. Ecteinascidin was submitted to the EMEA for registration in August 2006.

Biography - Dr Andrew Mearns Spragg

Dr Andrew Mearns Spragg graduated from Heriot-Watt University in 1996 with a BSc 1st Class (Hons) degree in Microbiology**.** In 1996, Andrew was offered a University Scholarship to study for a PhD at Heriot-Watt University isolating new marine bacteria and looking at ways of making these microbes express antibiotic compounds to target MRSA. He continued working at Heriot-Watt University as a Technology Research Broker, winning a Royal Society of Edinburgh/Scottish Enterprise (RSE/SE) Research Fellowship in July 2000.

Andrew is the founder of Aquapharm Biodiscovery (formed in 2000) commercialising its innovative technologies from marine microbes.

Andrew has been responsible for many aspects of the company's development, including attracting investment, business strategy and implementation, product development, technical sales and marketing and recruitment. Andrew is a named inventor on a range of patent applications that form the Aquapharm IP portfolio in relation to new antibiotic compounds, processes and novel applications.

Andrew is a winner of a SMART Scotland Award from the Scottish Executive, and runner up of "Who wants to be an entrepreneur?" managed by the Lanarkshire Development Agency. Andrew was also winner of the Fife area John Logie Baird Award for Academic and Medical Science.

In 2007, Andrew was elected a Fellow of the Royal Society for the Encouragement of Arts, Commerce and Manufactures (FRSA).

[1*]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. Last year, Dr Marie Claire

Parker of XstalBio Ltd won the award for "Protein-coated Microcrystal (PCMC) Technology" that could transform the treatment of many diseases by enabling protein medicines that currently need to be injected, to be taken with an inhaler.

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.

Following an open competition run by The Royal Society of Edinburgh, this year's Winner was selected by a distinguished judging panel, Chaired by Lord Ross, PC, FRSE, comprising: Mr Ewan Brown, CBE, FRSE; Professor Andy Walker, FRSE; Dr Ian Sword, CBE, FRSE; Dr Russell Leather (Chairman of Trustees of the Gannochy Trust), and Professor David Milne, OBE, FRSE.

Aquapharm

Aquapharm develops natural products from the, as yet, untapped microbial resource of the sea. With good access to diverse marine habitats, Aquapharm has sampled ecological habitats ranging from shallow brackish waters to the cold oceanic depths and has built a substantial and specialised library of over 6,000 marine bacteria and fungi. The microbial library sits at the core of the company and serves as a valuable resource for Aquapharm's own commercial activities in the development of new products for pharmaceutical, nutraceutical and cosmetic applications.

Aquapharm has developed culturing techniques within its laboratories that favour biological diversity, a strategy which has been rewarded by the discovery of many new species and subspecies, some of which do not fall into any known biological grouping. The microbial library sits at the core of the company and serves as a valuable resource for Aquapharm's own commercial activities

Aquapharm collects samples of bacteria and fungi from the marine environment to build a microbial library and a natural products library. This is valuable because the library could contain previously unknown compounds that may provide cures for diseases or answers to manufacturing problems. Using this library, Aquapharm actively looks for

- new antibiotics active against multi drug resistant organisms, such as MRSA, VRSA & c. difficile
- natural organic pigments for use in the human and animal feed industry.
- functional food active ingredients (foods with health giving benefits, i.e. anti-oxidants) An example of a marketed functional food is a fatty acid included in a yogurt & margarine which reduces cholesterol.
- Novel enzymes with applications in the pharmaceutical and food industry

http://www.aquapharm.co.uk/

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.

The Royal Society of Edinburgh (RSE)

The Royal Society of Edinburgh (RSE) is an educational charity, registered in Scotland. Independent and non party-political, we are working to provide Public benefit throughout Scotland and by means of a growing international Programme. The RSE has a peer-elected, multidisciplinary Fellowship of 1400 men and women who are experts within their fields. We seek to provide public benefit in today's Scotland by:

♦ Organising lectures, debates and conferences on topical issues of lasting importance
♦ Conducting independent inquiries on matters of national and international importance
♦ Providing educational activities for primary and secondary school students throughout Scotland
♦ Distributing over £1.7 million to top researchers and entrepreneurs working in Scotland
♦ Showcasing the best of Scotland's research and development capabilities to the rest of the World
♦ Facilitating Scotland's international collaboration in research and enterprise
♦ Awarding prizes and medals
♦ Providing expert information on Scientific issues to MSPs & Researchers through the Scottish Parliament Science Information Service.

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