

# MGB Biopharma licensed to treat deadly infections

MGB Biopharma, a Glasgow-based biopharmaceutical company which has licensed technology from Strathclyde, is developing a powerful new antibiotic treatment for resistant infections including the deadly MRSA and Clostridium difficile infections.

## Infections under the microscope

Clostridium difficile (C. difficile) is currently responsible for over 50% of all hospital-acquired infections and kills more than 28,000 people in the US alone. The US market for a new treatment is valued at \$200-300 million. DNA Minor Groove Binders (MGBs) are a class of compound that bind to DNA in a sequence-specific manner and can have anti-bacterial, anti-fungal, anti-parasitic and anti-cancer activity.

The Strathclyde team produced a library of several hundred compounds and examined their activity in a

number of disease settings, with a particular focus on gram-positive bacteria, e.g. C. difficile and MRSA, both of which can be fatal in humans. Whilst there are treatments on the market for MRSA, such as vancomycin, resistant strains of bacteria are now common and so there remains an unmet need for new drugs.

Professor Colin Suckling and his team had designed and synthesised compounds (DNA Minor Groove Binders) that had efficacy in animal models of MRSA infection. This work was funded in part by the significant royalty income arising from the University's commercial licence to Wyeth Inc. of IPR based on Professor Suckling's previous work on synthesising a pure form of the cancer drug Leucovorin. Professor Suckling undertook lead optimisation on six of the compounds that demonstrated particularly good efficacy in an in vivo model of MRSA, and it was this data package that the University used to attract the attention of MGB Biopharma, who subsequently licensed the entire portfolio of compounds for a number of therapeutic areas. Reaching this stage successfully depended greatly upon the strength of interdisciplinary research collaborations at Strathclyde and in the Glasgow science community at large.

## Commercialising the research

The University's Research & Knowledge Exchange Services team prepared a licensing package for the pharmaceutical industry based on these compounds. The University marketed them to targeted companies via its marketing vehicle, PharmaLinks (a dedicated resource for commercialising drug discovery & delivery technologies from Strathclyde). At an international Biopartnering event attended by the University, discussions began with what was to be the management of MGB BioPharma and the University subsequently negotiated a licensing deal with the start-up company. The deal itself was designed to create a well-invested start-up. Professor Suckling, Professor Hunter and Professor Gemmell from the University are members of the Joint Development Committee of MGB Biopharma, along with the management of MGB Biopharma and key investors. MGB Biopharma is currently pursuing the development of the compounds for use in bacterial disease.



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The introduction of a new class of antibacterial is an all-too-rare event in medical science. We are particularly proud to be working with the DNA Minor Groove Binder technology from the University of Strathclyde.”

Dr Miroslav Ravic, Chief Executive Officer, MGB Biopharma

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## Successful outcomes

One compound, MGB-BP-3, has achieved proof-of-concept in an in vivo model of *C. difficile* and is due to be registered as an Investigational New Drug (IND) in 2012. Subsequently, it will proceed to first-in-man clinical trials.

This success of compound MGB-BP-3 was announced at the 51st Interscience Conference and Antimicrobial Agents and Chemotherapy in Chicago and subsequently picked up by the international trade press and UK general press with Professor Gemmell being interviewed on Good Morning Scotland (20 September 2011).

MGB Biopharma was awarded the Nexxus 2011 Most Promising Young Life Science Company of the Year (West)



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We have come up with effective compounds that are capable not only of stopping *C. difficile* infections but also of clearing them. We believe this could be a significant step forward in tackling these dangerous infections.”

Professor Colin Suckling, Faculty of Science, University of Strathclyde

and Professor Suckling was awarded the Nexxus 2011 Lifetime Achievement Award.

## The University's response

MGB Biopharma has achieved a significant milestone within two years and will reach the IND stage with £2.2 million investment secured. This has been made possible through close collaboration, the vision of the University's drug discoverers, the commercially astute and flexible nature of Research & Knowledge Exchange Services (including PharmaLinks), and the vision of the Scottish-based Archangel Informal Investments Ltd.

The initial development of the technology was funded entirely through Scottish-based funding, first through the Synergy Fund (owned by Strathclyde and the University of Glasgow) and then through Scottish Enterprise's Proof of Concept Programme and from royalties from Isovorin®. Isovorin® is an isomerically pure form of the cancer drug Leucovorin, synthesised by Professor Suckling and others in the 1980s, with worldwide sales of \$50 million in 2009.

The investment for further development and commercialisation was led by Scotland's largest angel group, Archangel Informal Investments Ltd. Archangels led an angel syndicate to provide start-up funding with TRI Cap Ltd, Barwell plc and the Scottish Co-investment Fund. At £2.2 million, this represents the largest investment made by this syndicate in a life sciences technology.

Professor Suckling and the other members of the Joint Development Committee continue to play an active role in the development of the compounds, refining their structures, working on improving their stability, and obtaining the best formulation for patient use.

## How we can help your organisation

Strathclyde's Research and Knowledge Exchange Services team support the University's knowledge exchange activities in a variety of ways. If you would like to take advantage of our research and knowledge, please contact:

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