Synthesising Success

Jenny Molloy

Organic Chemistry holds a special place within the Department of Chemistry at the University of Cambridge, reflecting its importance as an academic discipline and its rich history. The 1702 Chair of Chemistry is the longest occupied chair of Chemistry in Great Britain and became the BP Chair of Organic Chemistry in 1992. When one early incumbent, Richard Watson, was appointed in 1764 he famously admitted that "I knew nothing at all of chym-istry, had never read a syllable on the subject…but I was tired of mathematics and natural philosophy" [1].

This could not be said of the Professor Steven Ley, who has held the post since 1992. His group has completed the total synthesis of over 120 products, including 31 derived from nature [2]. Their synthesis of azadirachtin, a highly complex molecule which prevents insects feeding on plants, was published in 2007 after 22 years of hard work [2]. While the synthesis itself cannot be used commercially, the process has led to a deeper understanding of the molecules function and reactivity, which could help in finding or synthesising other useful and environmentally friendly insecticides. Just after he came to the Chair, Ley envisaged an exciting future for synthetic organic

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chemistry "we are going to see spectacular advances in our understanding of cellular and biochemical processes…[and] the treatment of diseases" [3]. It is clear to see that the field is heading rapidly towards further such discoveries. ■

Jenny Molloy is a second year studying Biological Natural Sciences at Corpus Christi College. She is currently the Incoming President of The Triple Helix Cambridge.

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A Journey for Mice & Men

Goh Zhaojing

A research group in Singapore has generated unlimited numbers of pure insulin-producing cells from mouse embryonic stem cells (ESCs) [1]. These cells have proved highly effective in treating diabetes in the mouse model. If successful, obtaining similar cells from human ESCs would enable scientists to study their potential applications in diabetes treatment. With a rising incidence of the chronic disease worldwide, this is very welcome progress.

Diabetic mice and embryonic stem cells may be commonplace in biomedical research today, but countless scientists are standing 'on the shoulders of giants'.

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Sir Martin Evans was co-awarded the 2007 Nobel Prize in Physiology or Medicine for the principles of introducing specific gene modifications in mice using embryonic stem cells [2]. A student of Christ's College, Sir Evans returned to Cambridge in 1978 where he became the first to isolate stem cells from mouse embryos [3]. His pioneering research led to the creation of legions of 'knockout' mice; mice that are genetically altered to develop human diseases including cancer, cardiovascular disease, and diabetes. These mice have provided unparalleled insight into disease progression, and are invaluable in evaluating new drug therapies [4].

Of the countless more journeys to the new frontiers of biomedical science to be made this century, many are likely to be in the company of such furry pawed creatures first modified in Cambridge almost 30 years ago. ■

Goh Zhaojing is a second year studying Medicine at the National University of Singapore.

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