

SPIN-OFFS FROM UNIVERSITY SCIENCE

GUIDANCE FOR ACADEMICS on how to create high-tech companies

REVIEWED BY MICHAEL FREEMANTLE

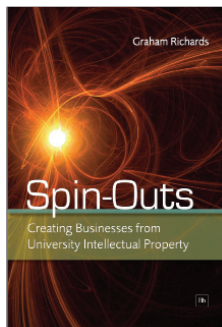
SPIN-OFF COMPANIES, or spin-out companies as the British call them, have become an important source of funding for British universities and a significant source of income for at least a few British academics over the past 20 years. Companies spun off from Oxford University's chemistry department, for example, have contributed more than \$110 million (£80 million) to the university's funds since the 1980s.

The creation of a successful spin-off company does not come easily. It can be time-consuming and stressful to the academics involved. There are pitfalls to avoid and problems to overcome. Nobody knows this better than Graham Richards, former

head of chemistry at Oxford University, and author of "Spin-Outs: Creating Businesses from University Intellectual Property."

The author is one of the pioneers of computer-aided molecular design. In 2004, he won the American Chemical Society Award for Computers in Chemical & Pharmaceutical Research (C&EN, Jan. 26, 2004, page 58).

The focus of his research has ranged from small molecules to proteins, DNA, and membranes. In the early 1980s, he published the first color pictures of molecular structures. In 1989, Oxford U established Oxford Molecular as a spin-off company to exploit the software for molecular design developed by Richards. The company was subsequently launched on the stock market with an initial public offering (IPO) in 1994.



SPIN-OUTS: Creating Businesses from University Intellectual Property, by *Graham Richards, Harriman House, 2009, 182 pages, \$48 (ISBN: 978-1-05641-98-7)*

Richards uses Oxford Molecular as a case study to illustrate how a company can be spun off from a university science department. The book provides a blow-by-blow account of the history of the company from its inception in the 1980s through its start-up with venture capital, its successful flotation, its acquisitions of other companies, and its eventual demise in 2000. A year later, the company was fused with

four others to form Accelrys, a company that provides software for chemical research.

The book also provides fascinating insights into Richards' background. For example, it briefly describes his doctoral research at Oxford U in the

early 1960s, when he was one of the first generation of graduate students to use a computer for research. The computer was a primitive valve machine known as a Ferranti Mercury. The device occupied a whole room even though it had a minute memory by today's standards.

His story takes the reader into some unlikely places at Oxford U. One of them is the Senior Common Room at Brasenose College, where Richards and Oxford Molecular cofounder Tony Marchington entertained visitors. The room became a key hospitality location for enhancing the company's public relations. Visitors were invariably impressed by its silver candelabra, fine wines, and other joys characteristic of the university's senior common rooms.

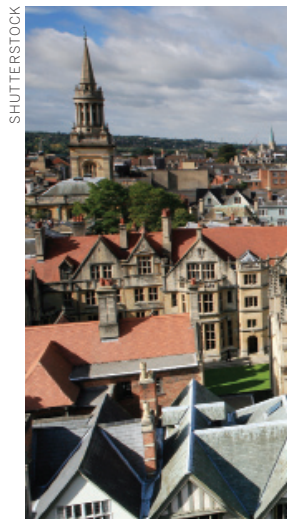
There are also humorous moments in the book. For example, Marchington spent a year in the 1970s carrying out undergraduate research on the design of a fungicide under Richards' supervision. Richards notes that Marchington characterized his style of supervision as one of "benign neglect."

The book outlines the creation of a number of other high-tech companies spun off from the university's chemistry department. They include Inhibox, a company Richards founded in 2001. The company uses computational methods developed by Richards to identify drug leads. It grew out of a "Screensaver Lifesaver" project that used the spare processing power of personal computers when they were idle. The Centre for Computational Drug Discovery, which was based in the university's chemistry department, developed and administered the project. Some 3.5 million personal computers in over 200 countries were involved in the project. In the first six months of the project, which was launched in April 2001, 3.5 billion molecules were screened against two protein targets for potential cancer-fighting ability. The project ended in April 2007.

The author was also a director of Isis Innovation, Oxford U's technology transfer company, for some 20 years. Among his many other roles during his distinguished career, Richards was chairman of the "intellectual property to IPO" firm IP₂IPO, which later became the publicly traded IP Group. He is now senior nonexecutive director of the company.

The company invested around \$40 million to help the university build a new \$130 million chemistry laboratory, which opened in February 2004. In return for the investment, IP Group receives the rights to 50% of the university's shareholdings of chemistry-related spin-off companies over 15 years.

The book is dedicated to former British prime minister and Oxford U-trained



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chemist Margaret Thatcher, “who made much of this possible” through her reforms. In the 1980s, she changed the tax regime in Britain to allow venture capital as a source of funding. She also permitted the intellectual property rights on government-funded work in universities to be transferred to the universities.

Although the book focuses on spin-offs from British universities, and particularly the Oxford U model for technology transfer, it should appeal to academics, universities, and potential investors in spin-offs in other countries. Much of the guidance offered in the book is widely applicable.

The Oxford U model aims to protect researchers’ work before it is published in the scientific literature. The university

GOOD BUSINESS
Oxford University
has created spin-
off companies.

owns the intellectual property generated by researchers in its departments. Isis Innovation, a wholly owned subsidiary of the university, has responsibility for creating wealth from the intellectual capital created at the university. It does so by negotiating licensing deals and acting for the university to set up spin-off companies.

Isis Innovation pays all patent and legal costs, which it recovers from licensing royalties. It also retains 30% of the royalties. The remaining revenue from royalties is split among the researcher(s), the university general fund, and the department funds.

The researchers receive the major portion of the initial net revenue. As revenues increase, the researchers’ share decreases on a sliding scale and the university and department receive increasing portions.

The equity in spin-off companies is split three ways: among the party that provides the funding, for example, a venture capitalist; Isis Innovation acting for the university, which owns the intellectual property; and the researcher(s), “without whom nothing can happen.” Typically, the investors receive 40% of the shares; the university, 25%; and the researcher(s), 25%. The remaining 10% is held back for the managers of the new company.

Richards is also explicit about the high legal costs and bureaucratic complexity of forming a company in the U.K. But there are more general problems and dangers as well.

For example, he stresses that the function of a university is to carry out research and to teach. It is essential that knowledge

should be freely disseminated. However, this notion sits uncomfortably with the protection and exploitation of intellectual property. He therefore recommends that universities should have some method of scrutinizing potential conflicts of interest between publication of research and its commercialization.

When Richards started to apply quantum mechanics to biological molecules in the 1960s, many regarded the research as esoteric. But as he points out, “blue sky” research is more likely to lead to profitable intellectual property than research that is regarded from the outset as commercially exploitable.

At first sight, as you flit through its pages, the book may appear to be dry and dull. But do not be put off by the page-filling lists of companies spun off by the university. There is much to enjoy in the book. It is clearly written, informative, and entertaining.

And at just eight chapters, it is not long. One chapter provides a brief history of spin-offs, and another offers some guidelines for starting a spin-off company. The other chapters focus principally on technology transfer at Oxford U. Two of these are devoted to Oxford Molecular and another to IP Group. You could easily read the book in one evening or during a flight from New York to San Francisco.

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