

Business for the Bio-scientist



A module to develop business awareness in bioscience graduates

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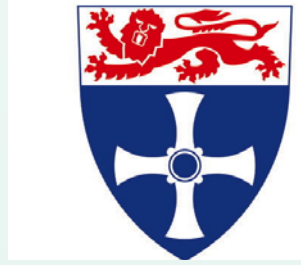
School of
Biomedical Sciences



Why develop a business module for bioscientists?

- External pressure
 - To develop entrepreneurial awareness and culture
- Internal pressure
 - Students wanting to do business modules
 - Those available not tailored to bioscientists
- Decided to develop a module that addresses business issues in the context of the biotechnology industry

Why is it important for our bioscience graduates to know about business?



The UK biotech sub-sector¹ includes over 400 companies, employing over 25,000 people, and generating revenues of £3 billion.

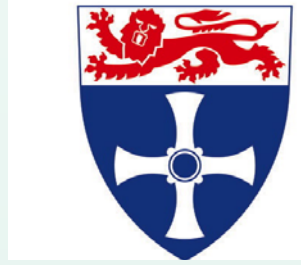
The broader bioscience/healthcare sector (which also encompasses diagnostic, device, service and supply companies) includes over 1,100 companies, employs 100,000 people, and generates revenues of £11 billion.

The UK is the European leader in the bioscience industry, and number two in the world after the US.

Business knowledge is also of relevance to graduates entering jobs in other industries

¹<http://www.bioindustry.org/bigtreport/delivery.html>

Entrepreneurship in Bioscience education



Justification for module was NOT based on the expectation that many students will go on to start a biotechnology company.

But rather that

The students would benefit from an improved understanding of business and the enhanced personal creativity that entrepreneurship brings

Planning - through developing a business plan.

Innovation - through creating a virtual company.

Presentation - presenting their business proposition to VC funders.

Team working - through a workshop "role play" setting up a biotech company.

All will hopefully lead to greater employability in the business sector



Who does the module?

- Business for the Bioscientist is one of three optional 'vocational' modules offered to final year students on various BSc courses
- Other modules
 - Student tutoring
 - Research module
- Students encouraged to choose module on the basis of their career aspirations



Course design principles

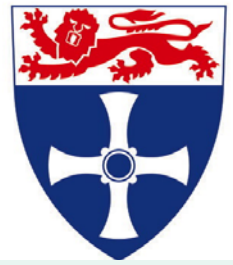
Module title: Business for the Bio-scientist (BMS303)

First developed: 2001

Objective: to develop a 10 credit stage three undergraduate module to inspire an entrepreneurial culture - three factors were considered essential¹

1. **Learning about it** - academic lectures.
2. **Doing it** - preparing/presenting business plans, hands on workshop.
3. **Involving entrepreneurs** - lectures from bio-industry professionals.

¹Vyakarnmam, S. (2002) Developing enterprise courses: What works? Training the Trainers Workshop of the Cambridge-MIT Institute, London Business School.



Course content

1. Learning about it

<i>Lecture 1</i>	From Science Idea To Spin-Out Company
<i>Lecture 2</i>	Developing Enterprise & Entrepreneurship
<i>Lecture 3</i>	Bioscience Business Planning
<i>Lecture 4</i>	Financing A High Growth Bioscience Business
<i>Lecture 5</i>	Legal Aspects Of Setting Up A Biotech Company
<i>Lecture 6</i>	Intellectual Property Rights

2. Doing it

Writing a business plan

Presenting the business plan to a board of VC funders

Role-play workshop to set up a spinout company.

3. Involving entrepreneurs

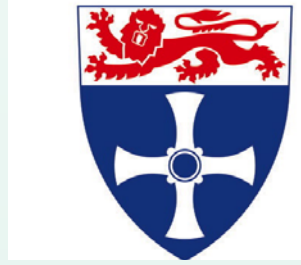
<i>Lecture 4</i>	Mr D. Lowery, nel VC.
<i>Lecture 7</i>	Dr A. Kelly, CSO, Biotechnol. S.A.
<i>Lecture 8</i>	Mr B. Hoy, CEO, Xcellsys
<i>Lecture 9</i>	Prof. F. Wright, CEO, CELS



Additional benefits

- Several of the contributors to the module were bioscience graduates: role models
- Contributors also able to offer some career guidance

Assessment



Assessment based on course work:

Assessment 1 (30%)

A business plan based upon a given bio-business proposition

Assessment 2 (15%)

An oral presentation on the business plan to a panel of venture capitalists

Assessment 3 (10%)

Worksheet on intellectual property rights

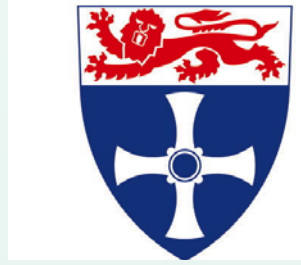
Assessment 4 (15%)

Workshop session - a teamwork exercise in role-play

Assessment 5 (30%)

Written report on workshop from the perspective of their role-play characters: submit in 48h

Bio-business plan scenario.....

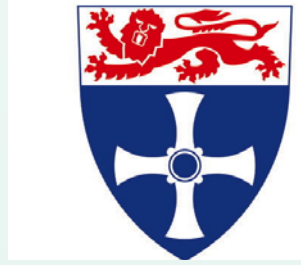


You have discovered a specific and highly sensitive antibody, which is the best so far for detecting BSE in meat samples.

You could sell it to an antibody company by a licensing agreement and retire; or you could make a lot of money by starting your own company, which will market the test kit and sell it directly to governments and consumers throughout the world.

As an entrepreneur you have obviously chosen the latter and you must write a two-page business plan to convince the investors Grabbit Corp that they should give you the money to get started.

Student companies



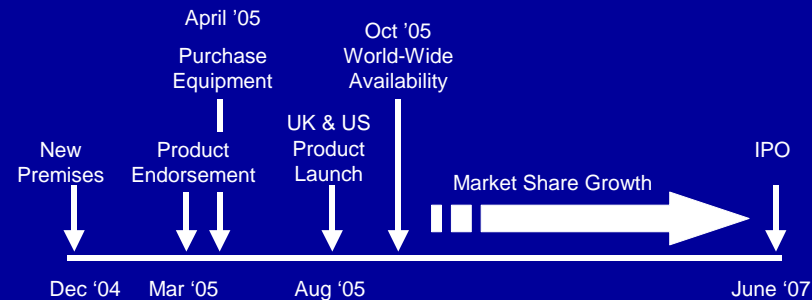
BSEliminate



When you need to
know

Dan McCulloch

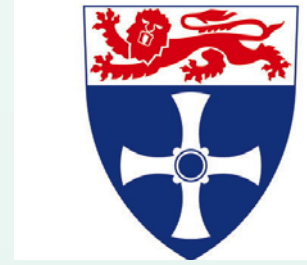
BSEliminate



Dan McCulloch

Marks were awarded for content, professionalism and "flair and fizz".
Marks were lost for poor presentation and spelling mistakes.

Student companies



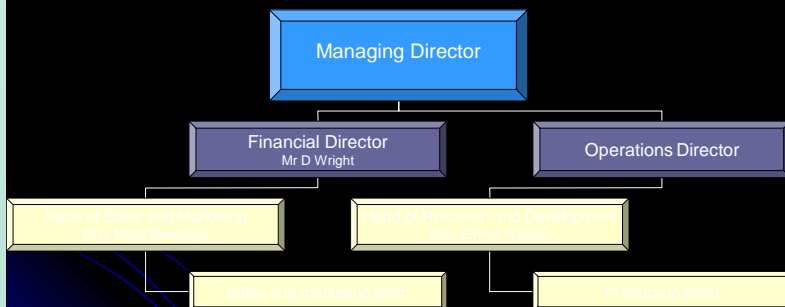
Ab -Lab

Revolutionizing Antibody
Technology

Emma Watson

Business plan presentations demonstrate
personal creativity

Management Organisation

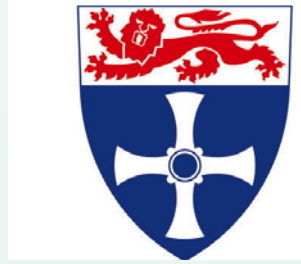


Unique Selling Points

- Long shelf life
- Can be used by someone untrained scientifically
- Electronic positive or negative signal
- Fastest kit on the market



The workshop



Aim: to negotiate with a number of interested parties and set up a spinout company - **Quick Profit Ltd.**

The characters

Enterprise University - A popular and established University.

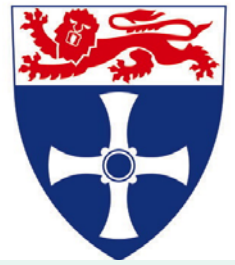
Prof. Rupert Branson - Head of Department of vini-culture.
Drinks fine wines and drives a Porsche.

Venture Plc - An equity funder, hoping to break into the academic technology transfer market.

Booze Ltd - A drinks manufacture.

Angel Smallump - Has money to invest to maximise tax relief.

The workshop scenario.....



Prof. Branson has developed a process to make water into wine, without using traditional methods.

His research has been carried out at Enterprise University, but he has also been using the facilities at Booze Ltd.

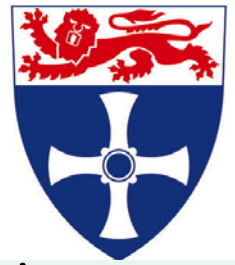
Booze Ltd have also paid for Branson to travel extensively for research purposes.

Branson estimates that to set up Quick profit Ltd he needs £500,000.

Venture PLC will fund £250,000 and Angel Smallump will invest £100,000

The shortfall can be raised by Branson and a loan from Booze Ltd. Branson has also approached the University Enterprise office for assistance.

The role play



Each character had a different and clearly defined personal objective. In groups of five, the students negotiate in order to resolve company questions including the following:

- How many directors should there be?
- What happens if the directors disagree?
- Who should be the shareholders?
- What proportions of the shares should they hold?
- What rights should each shareholder have?
- How should decisions about the company be made and by whom?
- What arrangements should be made for any intellectual property in the invention?
- How should the £150,000 balance of the funding be met?
- How should the arrangements be able to be terminated?

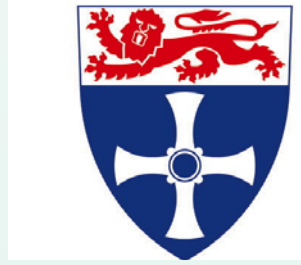
Assessed on group discussions, oral feedback (team mark) and written report (individual mark).

Module evaluation

Evaluation Question	Mean	SI
The Module was interesting and enjoyable.	4.3	75.0
The content was appropriate for a business module.	4.7	87.5
The business plan scenario was appropriate and effective as a business proposition.	4.7	85.0
The business plan oral presentation was a useful experience.	5.0	87.5
The case study lectures (lectures 7, 8 and 9) provided a useful insight into bioscience business.	4.7	82.5
The workshop was an effective exercise in teamwork.	5.3	87.5
The module has provided a greater understanding of intellectual property rights and company law.	5.1	85.0
The module has given you a greater appreciation of financial and strategic planning.	4.5	75.0
The module has given you a basic knowledge and understanding of marketing.	4.5	82.5

**SI is the Satisfaction Index (the % of scores of 4 or above)
1= strongly disagree, 6= strongly agree**

Evaluation Question	Mean	SI
The module has given you a basic knowledge of business planning.	4.9	87.5
The module has given you a basic knowledge/understanding of the objectives of bio-industry.	5.0	87.5
The module has helped develop your ability to deliver short oral presentations.	5.0	85.4
The module has given you a greater understanding of how a bioscience idea can reach the market place.	4.9	90.2
The module has given you a greater understanding of the role of management in bio-industry.	4.7	82.9
The module has helped develop further your knowledge of how to start-up a biotech company.	4.8	87.8
The module has furthered an interest in bioscience business.	4.0	58.5
The module has made you more likely to consider starting your own bioscience business.	3.4	41.5
The module has made you more likely to consider starting your own business of any type.	4.0	63.4



Summary and conclusions

- Delivery depends heavily on non-academics
- Assessment tasks diverse and relevant
 - Focus on skills as well as knowledge
- Student achievement does not always correlate with marks in exam-based modules
- Module is well-received by students
 - Learning outcomes achieved
 - Increasing numbers opting for module

Acknowledgements

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