

**Bioscience Business Plan Competition:
report on commercial activity of
participating teams**

FINAL REPORT

**Presented to the BBSRC by Critical I Limited
30 September 2003**

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Executive summary

This study provides clear and incontrovertible evidence that the BBSRC/MRC's first two Business Plan Competitions have had a significant impact in stimulating first the consideration and, secondly, the active commercialisation of research outputs by their research communities. In particular:

- Sixty-five per cent of respondent teams have commercially exploited their research since participating in the Competitions. A further 15% are still attempting to do so.
- Ten spin-out companies have been formed.
- These new companies have raised £2.3million of investment thus far, created 27 full-time equivalent jobs, spent just over £1 million on R&D and generated £2.1 million of revenues.
- The performance of the ten companies is on a par with that of their UK biotech peers of similar age. Assuming that they pursue a growth trajectory akin to that of the UK biotechnology companies formed in 1996, then after 6 years one might expect them to be employing over 200 people, to be spending approx £25m per year on R&D and generating annual revenues in the order of £39m.
- The potential lifetime value of the licence deals and contracts negotiated to date by respondents is estimated by them to run in to several, perhaps tens, of millions of pounds, although such estimates clearly have to be treated with caution at this early stage.
- Researchers believe the competitions have had a significant enhanced understanding and awareness of what is needed in order to build a robust and sustainable biobusiness. The very high importance they attach to identifying a clear market need and to understanding the competitive landscape marks a significant shift in academic researchers' appreciation of the commercial marketplace.
- Ninety-five per cent of respondents believe that the competitions have better equipped them to identify research outputs with commercial potential. Almost 60% reported the competitions' impact to have been either Significant or Very Significant in this regard. The same number felt their ability to identify the most appropriate commercialisation route has been enhanced by the competitions.

- Ninety per cent of respondents (including those who have decided against commercially exploiting their idea and those who are still trying to do so) regard commercialisation as a more attractive proposition as a result of entering the Business Plan Competition.

These findings arise from a quantitative and qualitative study of the thirty-two teams who participated in the mentoring (Stage II) phase of the first two Business Plan Competitions. Full details of the methodology employed are given in Appendix A.

Analysis of commercialisation activity

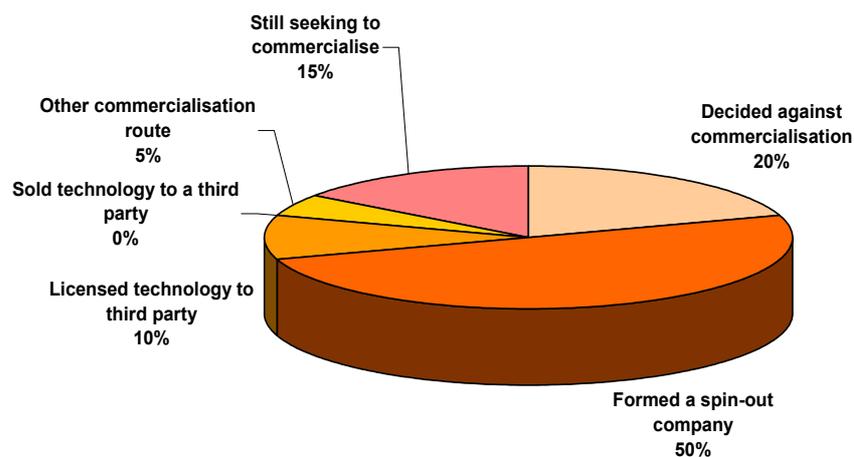
Levels of commercialisation activity

The study reveals an encouraging level of commercialisation activity by past participants, with 65% of respondents having already actively commercialised their research outputs (Fig 1), and a further 15% still actively attempting to do so. Of the thirteen ideas commercialised, eleven are based on the idea entered in the Business Plan Competition.

Formation of a spin-out company has been the preferred route for three-quarters of those who are pursuing commercialisation. Of those 10 companies, seven are products-based operations, two are service-based businesses, and the other is a combined products and service operation.

The figures mask the role being played by technology licensing as a commercialisation vehicle as a number of the spin-out companies have either licensed or intend to license their technology to third parties.

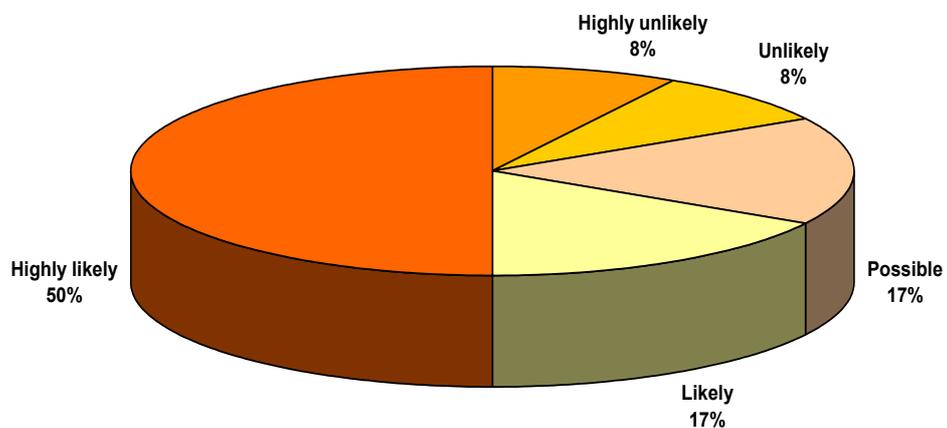
Fig 1 Respondents' commercialisation activity since participating in Business Plan Competition



Two of the three teams still seeking to commercialise their idea are focused on developing healthcare therapeutic products, and the other is developing instrumentation. The difficult funding environment for the biosciences has adversely affected the first two. All three teams remain extremely determined and, as this report was being finalized, one was in the early stages of due diligence discussions with an informed and experienced biosciences investor.

Figure 2 below indicates that two-thirds of those who have commercialised their research feel that it was either highly likely or likely that they would have done so, regardless of the impetus provided by the Business Plan Competition (“BPC”). Whether or not this would have been the case is impossible to determine. However, it is clear from the qualitative research (see below) that all participants benefited significantly from the BPC, not least in motivating them to devote time and energy to progressing their idea. One suspects that a number of respondents may, ex post facto, have over-estimated their own determination and under-estimated the impact of the BPC in that regard. Notwithstanding this, the survey results do tend to confirm the view that those with the inclination to commercialise their research are a self-selecting sample, given the degree of determination, effort and imperviousness to rejection that tends to be involved.

Fig 2 Respondents who have commercialised their research: claimed propensity to commercialise without Business Plan Competition



Reasons given for not commercialising initial Business Plan Competition ideas

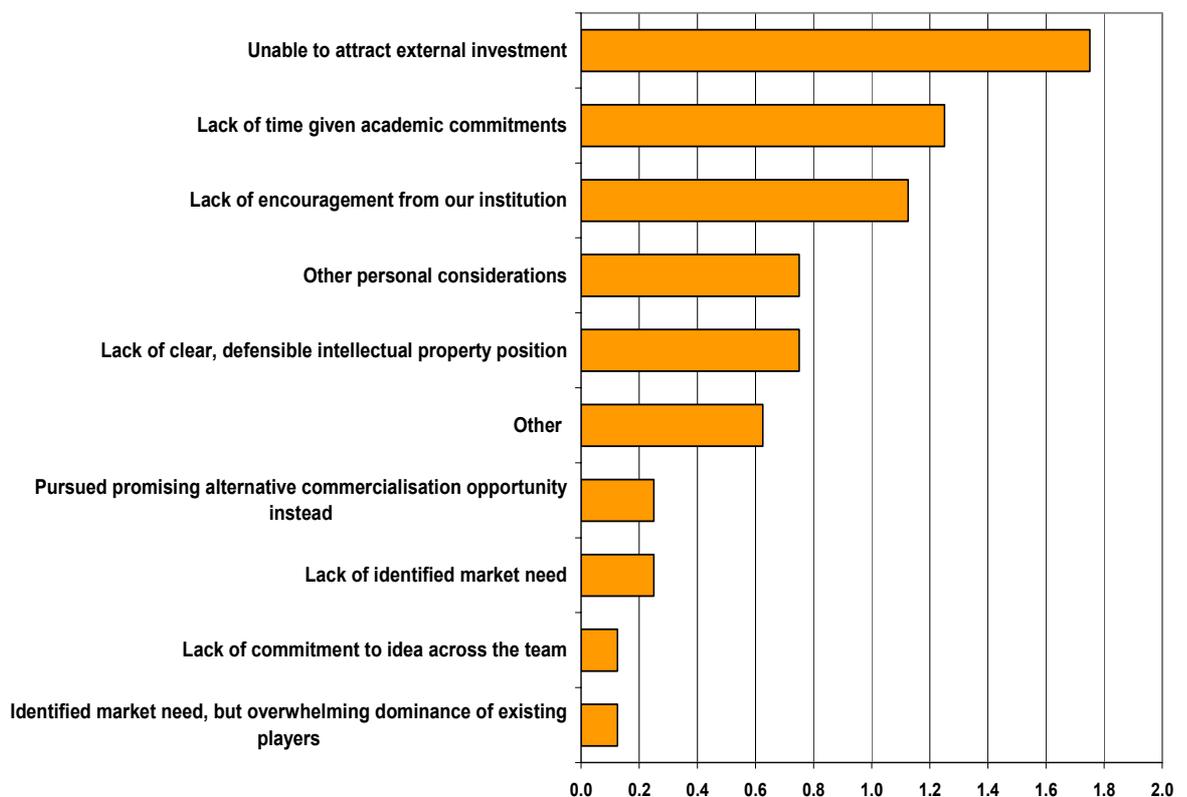
As one might expect, inability to attract investment was cited by teams as the main reason for not taking their Business Plan Competition idea to the market place. It is clear from the qualitative phase of the study that this factor masks a number of others – most notably, lack

of a clear IP position or the existence of a dominant player in the market already. However, a worrying finding from the study is the lack of support received by a number of teams from their institution (Fig 3). Three respondents observed that their departmental heads, while paying lip service to the notion of commercialisation, had made it clear that commercialisation would be actively discouraged and hinder their promotion prospects if it interfered with their ongoing research commitments. In each case no time allowance has been provided in the academic timetable for the individuals involved to advance the business idea. Two of the individuals are ambitious post-docs, keen to make rapid progress up the academic ladder, and have thus reluctantly decided not to pursue their idea further for now. Another respondent is a highly regarded academic running a significant research group, who received such a disappointing degree of support from his/her technology transfer office that funding was not forthcoming for patents to be filed to protect the innovation concerned. An industrial collaborator has subsequently filed patents for the technology in its own right, without recourse to either the university or the academic concerned.

Even if the institution is keen to support commercialisation, it may lack the budget required to fund the patenting costs – whether initial filing or subsequent fees, or advisory fees – to protect an academic’s innovation. This issue was raised by several interviewees, and will clearly remain a significant issue until commercialisation funding and support moves up the higher education agenda.

Fig 3 Factors influencing decision not to commercialise Business Plan Competition idea

Scale: 0 - Not at all relevant, 1 - Relevant, 2 - Very relevant, 3 - Critical factor

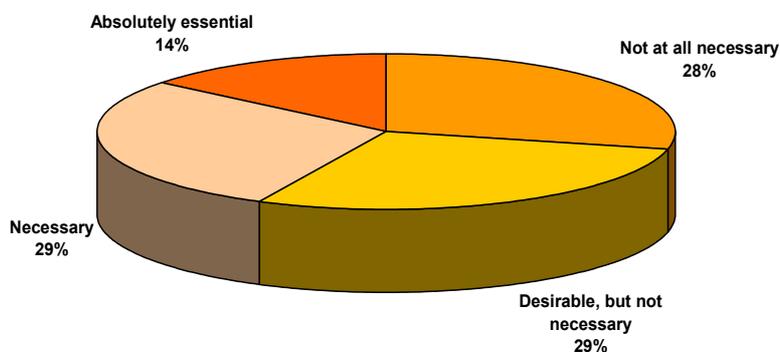


Clear, strong intellectual property as a precondition to commercialisation

In respondents' experience, the importance of IP varies, depending on whether one is seeking investment or seeking customers.

Clarifying or strengthening their IP position has, as one would expect, been either essential or necessary to all but one of the teams seeking to secure either significant investment or major technology licensing deals. As one would expect, third parties have been acutely aware of freedom to operate issues and, in the case of patents not yet granted, have sought from teams very detailed justification of their position vis-à-vis apparently overlapping patents and applications elsewhere. (Several interviewees commented that they had not appreciated how much time and effort would be involved in dealing with such issues and that it is easy to under-estimate the cost of obtaining relevant professional advice for this purpose).

Fig 4 %age of respondents needing to clarify or strengthen their intellectual property position in order to commercialise research outputs



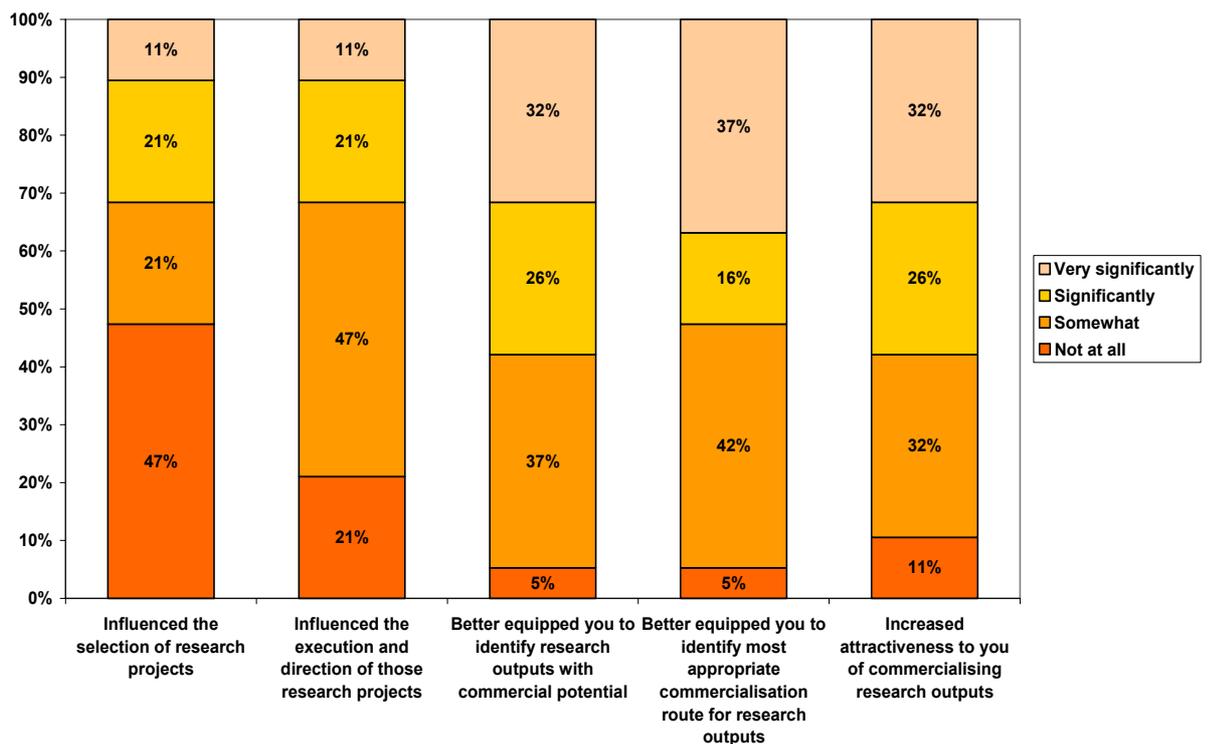
Interviewees seeking to negotiate relatively high value contracts with major corporates have found it necessary (but not essential), to demonstrate that they have appropriate rights to their intellectual property. This is particularly so where the technology or service being provided is focused on business critical activities – for example, screening of compounds for activity. Those providing non business critical services to third parties have found lack of clear IP to be either a non-existent or minor hurdle in securing business, regardless of the size of customer.

Impact of the Business Plan Competitions on participants' subsequent research activities and commercial awareness

Two of the main objectives of the Business Plan Competitions were to enhance participants' awareness and understanding of the issues involved in developing a sustainable bioscience business, and to encourage them to consider commercial applications for their research outputs. This study indicates that the competitions have been extremely successful on both counts.

As Figure 5 shows, the competitions have had a major impact on academic thinking from the earliest stages of identifying and executing research projects. Commercialisation considerations now feature in the thinking of over half the respondents when choosing between research projects. It is apparent from the qualitative interviews that consideration of such issues is a new and important departure from previous practice for a sizable proportion of competition participants.

Fig 5 All respondents: impact of Business Plan Competition on subsequent research activity



More importantly, the competitions have influenced the way in which 4 out of 5 participants now plan and execute their research projects. The interviews identified four key areas in which this manifests itself:

- First, in seeking ways to manage the academic need to publish research outputs without compromising their ability to secure appropriate intellectual property protection.
- Secondly, in stimulating their desire to be more aware of the market's needs. (It's a generalization, but hopefully a fair one, to observe that much life

sciences research tends, by its very nature, to be further removed from the marketplace than much physical sciences research. Life scientists are thus likely to have less direct interaction with industrial and commercial enterprises).

- Thirdly, in giving serious consideration to whether and, if so, how their research outputs might have commercial application and then seeking ways to explore that potential as an integral element of the project work programme.
- Finally, in giving careful thought as to how their research outputs might best be presented to industrial collaborators, with a view to enlisting their support for its further development and exploitation.

Ninety-five per cent of respondents believe that the competitions have better equipped them to identify research outputs with commercial potential, with just under 60% reporting the competitions' impact to have been either Significant or Very Significant.

The same percentage felt that their ability to identify the most appropriate commercialisation route has been enhanced by the competitions, with 53% reporting either a Significant or Very Significant impact.

Ninety per cent of respondents (including those who have decided against commercially exploiting their idea and those who are still trying to do so) regard commercialisation as a more attractive proposition as a result of entering the Business Plan Competition. This is gratifying as the competitions have been held during a particularly difficult investment period for the life sciences, and it remains so.

In our view, the competitions have had a very significant and welcome impact on researchers' understanding and awareness of what is needed in order to build a robust and sustainable biobusiness. The very high importance attached by respondents to identifying a clear market need and to understanding the competitive landscape marks a significant shift in academics' understanding of the commercial marketplace (Figure 6). Experience shows that most participants, at the outset of a Business Plan Competition, regard the quality of their technology as the most important factor in ensuring future commercial success. The comment of one interviewee epitomises this mindset shift:

"The most important message I learnt from the competition, and subsequently, is that good marketing is far more important than good technology."

Fig 6 All respondents: perceived importance of factors in developing a sustainable biobusiness

Scale: 0 - Not at all important, 1 - Important, 2 - Very important, 3 - Essential

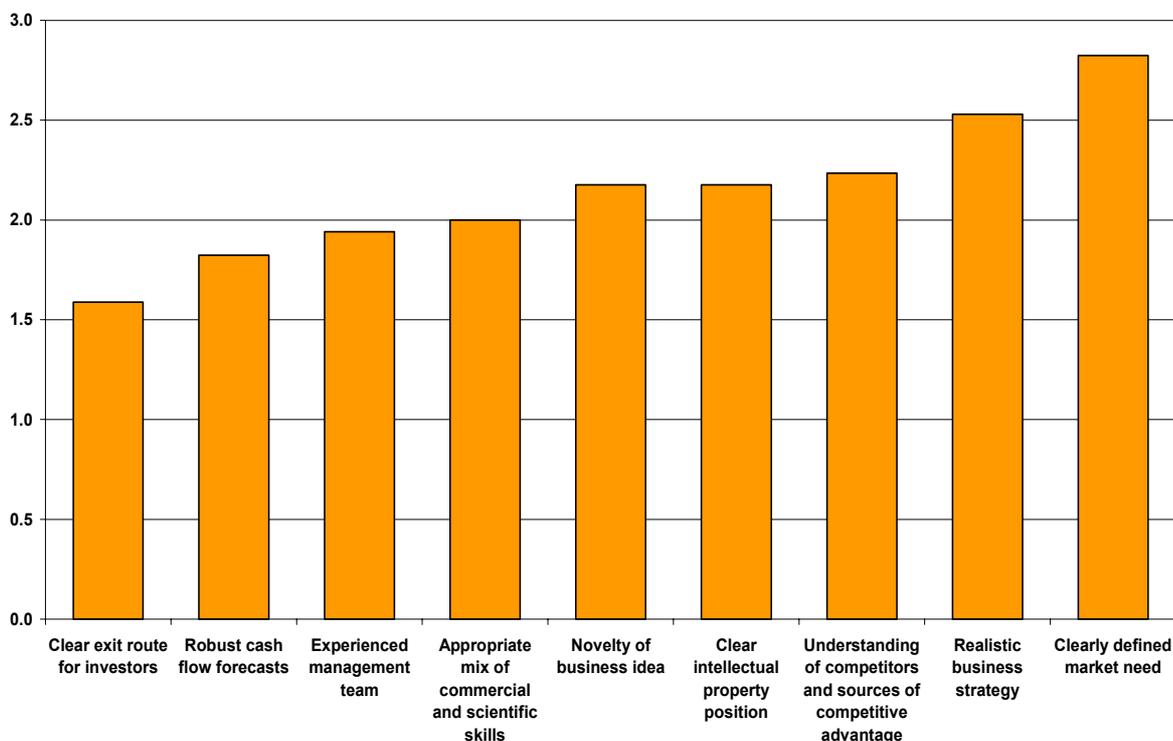
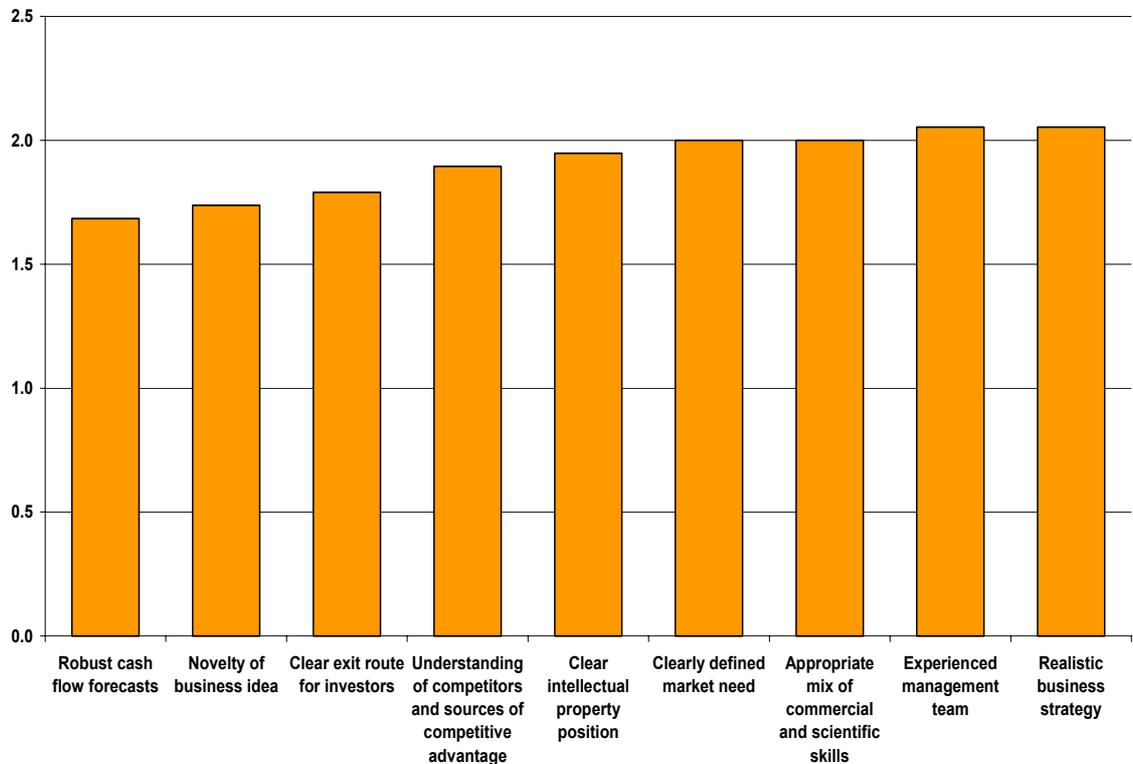


Figure 7 below identifies the areas in which participants believe the Business Plan Competitions have most raised their awareness and understanding. It is clear from the interviews that participants' increased appreciation of the need for a realistic business strategy has been brought in to yet sharper relief by their post-competition experience. A sizable proportion of interviewees emphasised how they have had to adopt a flexible and responsive approach to market conditions, thereby departing from the proposed strategy set out in their initial business plan.

Of particular note is the competitions' success in highlighting the vital importance of having experienced management with the right mix of scientific and commercial skills. The emphasis placed on this both in the workshops and, more importantly, in the mentoring phase of the competition has significantly enhanced researchers' appreciation of the challenges and difficulties associated with setting up and running a biobusiness, and greatly increased their willingness from an early stage to bring on board people with the required skills and experience. In 1999, when the first competition was held, a significant number of participants expected to fulfil commercial functions themselves. Since then few, if any, participants have held such ambitions. A few, however, of necessity have had to fulfil this function while seeking sufficient funding to attract commercial management.

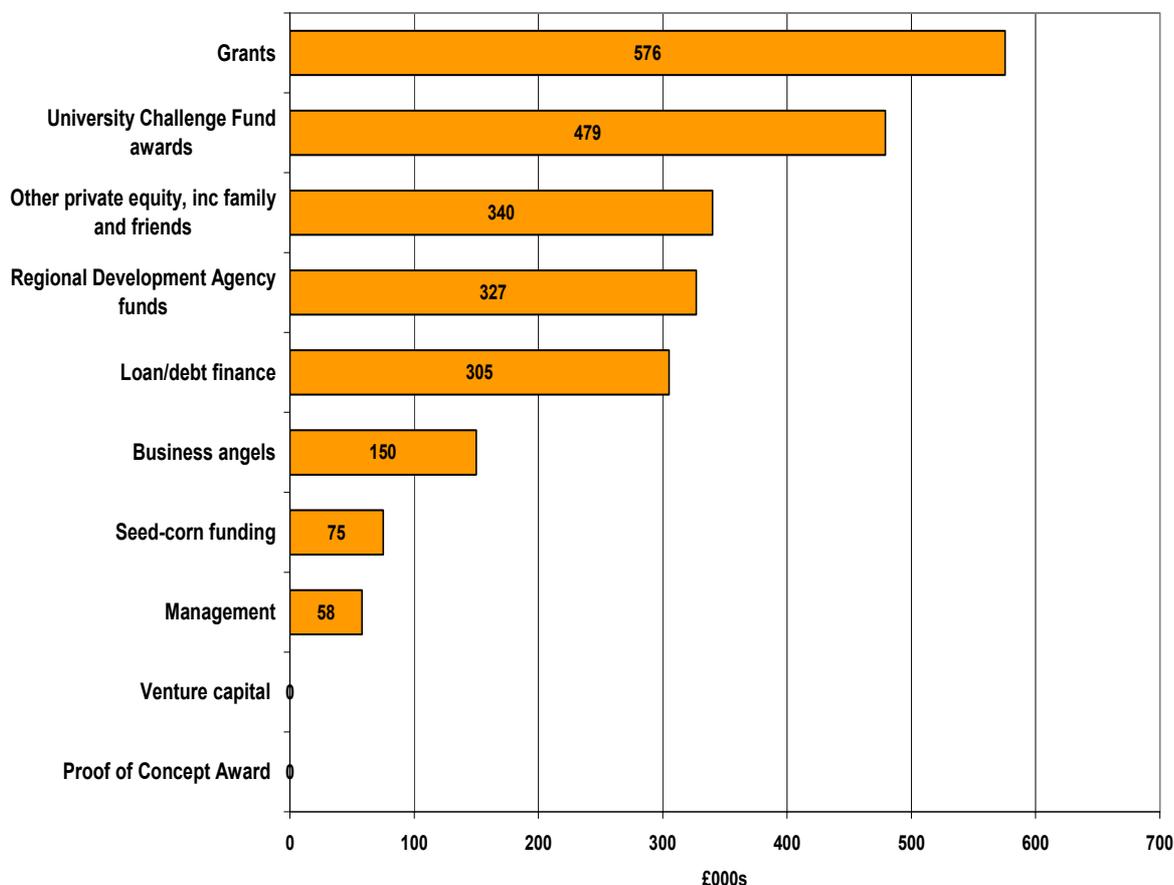
Fig 7 All respondents: increase in awareness and understanding of commercialisation factors as result of participating in Business Plan Competition



Fundraising success of spin-out companies

The ten spin-out companies formed by respondents had raised just over £2.3m of investment funding by end June 2003, as shown in Figure 8 below. Of that sum, £1.72m was raised by three companies, one of whom had raised just under £800k, with the balance split almost equally between the other two. (The latter are based north of the Border.)

Fig 8 Spin-out companies: funds raised by business up to 30th June 2003



The above sources of finance have been split in to three groups in Figure 9. The first group are public or quasi-public sector sources; the second represents seed and early-stage sources. The third group are fully commercial sources.

A total of £1.38 million of public or quasi-public sector funding (59% of the total) has been raised by eight companies. Of these, six have raised Grant funding. This includes one SBRI Award winner.

(BBSRC's execution of the SBRI scheme was very favourably commented upon by successful and unsuccessful applicants alike. The successful applicants are of the view that such awards are likely to provide a significantly better return on the Council's investment, in both scientific and commercial terms, than most funding awarded directly to academic departments. This is due, in their view, to the clear linkage that SBRI establishes between the achievement of technical milestones and the advancement of the company's commercial objectives. Two unsuccessful SBRI applicants were equally positive. One suggested that the SBRI initiative might be explicitly positioned within the Business Plan Competition process as a potential stepping-stone towards funding.)

Fig 9 Number of companies raising particular types of finance

Type of finance	Number of companies	Amount £k	Comments
Grants	6	576	6 companies
University Challenge Fund awards	32	479	2 companies account for £475k
Proof of Concept Awards	0	0	
Regional Development Agency funds	3	327	2 companies based in Scotland account for £261k of total; balance made up of two SMART Feasibility Awards under pre 08/03 scheme
Management	4	83	£50k from BPC prize money from 2 past winners
Seed-corn funding	1	75	Funding provided to 1 company by the 2 universities in which its founders are based.
Business angels	1	150	Scottish company
Venture capital	0	0	
Other private equity	1	340	Equity investment by commercial strategic partner
Loan/debt finance	4	305	1 Scottish company accounts for £225k

Only two companies have raised funds from seed or early-stage investors. The £75k seed-funding was provided on a £50k:£25k basis by the two universities at which the company's founding IP was developed. Four management teams have invested in their business. This includes the two overall winners of the 1999 and 2001 Business Plan Competitions who have invested their prize-money in their companies. The other two management investors are both extremely determined and committed and, in our view, amongst the most entrepreneurial participants in the Business Plan Competitions to date. Neither of them, incidentally, made it to the Finals of the competition.

At the time of writing two further teams are in advanced discussions with business angels to secure a total of £1.2m of milestone-based investment. Both teams are reasonably confident that they will be successful. Indeed, one has received an "exclusive first-look" payment from the investors concerned.

The absence of venture capital ("VC") investment is notable, but unsurprising for three main reasons. First, where VCs have made investments, they tend to have been multi-million pound sums in companies that have a very deep and broad technology capability that is reasonably well-developed. VCs' interest has shifted significantly in recent years from technology platform companies to those offering early returns and a therapeutic focus. All the interviewees who had approached VCs were told that their technology was at too early a stage to be of interest to them. Our suspicion is that only three, or at most four, of the ten businesses are at any point likely to be of interest to venture capitalists, regardless of the point to which their technology has been developed. Furthermore, venture capital funds have over the last couple of years been, and continue to be, heavily focused on rationalising their existing portfolios and less disposed towards making new investments.

One company has secured £340k of equity investment from a US-based pharmaceutical company under the terms of a strategic collaboration deal. No other private equity has been raised to date by companies, although one might reasonably expect similar investments to be struck by other of the companies in future.

Three points are worth noting regarding debt funding. First, is the fact that early stage companies such as these have been able to raise debt finance. Second, is that £280k of the £305k total has been secured by Scottish companies. Third, is that three interviewees referred to the Small Firms Loan Guarantee Scheme as a potential source of funding. However, their experience has been that the high street banks, who administer the scheme on behalf of the Government, remain extremely risk averse notwithstanding that loans advanced under it are 75% underwritten by the public purse. This has been an enduring criticism of the scheme over many years across many industry sectors, not just biotechnology.

Measures of commercial activity

The study sought to identify a number of measures of commercial activity that might be used to assess the economic impact - thus far – of the 1999-2000 and 2001-2 Business Plan Competitions. Two years is, of course, a very short and unrealistic timeframe within which to evaluate the value created by life sciences start-ups, as most have long product development lead times and, in their early years, heavy R&D expenditure and modest or negligible revenues. It is not until much later that most start to have a significant economic impact. Furthermore, one must bear in mind that the figures below are **not** a proxy for the overall value created by biotechnology companies – they do not include a measure of the value attributable to the proprietary intellectual property they create.

Fig 10: Comparative commercial performance of BPC companies and UK biotech companies (2001 year-end figures) ¹

	BPC companies – total as at 30/6/03	UK biotech companies formed in 2000 - sector overall averages per company (2001 year- end figures)	UK biotech companies formed in 1996- sector overall averages per company (2001 year-end figures)
Number of companies	10	43	33
Total UK employees	27.5	338	672
Average employees per company	2.75	7.9	20.4
Total R&D spend	£1.03m	£12.6m	£83.6m
Av R&D p.a. spend per employee	£37.5k	£37.3k	£124k
Total revenues	£2.13m (to date)	£16.4m (2001)	£108.1m (2001)
Av revenues p.a. per employee	£77.5k	£48.5k	£161k
Products launched since formation	4		
Services launched since formation	17		

¹ Comparative figures for other UK biotech companies are based on Critical I's proprietary database of commercial performance metrics for the international biotechnology sector. Data is based on 2001 calendar year-end information.

The BBSRC should be encouraged by the commercial performance thus far of the companies formed by competition participants. As Figure 10 illustrates, their performance is on a par with the 2-year performance of UK biotech companies formed in 1999.

Furthermore, if participants follow a growth trajectory similar to that of the 33 UK biotech companies formed in 1996, then after 6 years one might expect them to be employing over 200 people, to be spending approx £25m per year on R&D and generating annual revenues in the order of £39m.

Since participating in the two Competitions, teams have granted 8 licences to third parties, with a total initial value of £460k. Two of the licences are for technology evaluation. One is noteworthy: it relates to a potentially valuable drug delivery application of the team's core technology. The team decided to out-licence the technology to an overseas pharmaco on terms that provide for a modest royalty in return for the pharmaco meeting all development costs. Thus, value has potentially been extracted from a tangential application of the technology that would not otherwise have been pursued.

Fig 11: Licensing and contractual activity since participating in the Business Plan Competitions

	Number granted/won	Initial income generated	Potential lifetime value of deal	Comments
Licences	8	£460k	£10.5m	Inc £10m attributable to potential drug delivery application of technology. One participant was unable to attribute a potential lifetime value to its licensing deal due to i) early-stage of technology development and ii) the wide range of potential applications being explored.
Contracts	32	£1226k	£36.6m	Potential lifetime value inc £35m attributable to one collaboration deal for development of early stage human therapeutic products. Two participants were unable to estimate the long-term value of rolling contracts secured with specific clients

More important, perhaps, is the commercialisation route taken by one of last year's finalists. Post-Competition it became clear, first, that the core technology has multiple potential applications and, secondly, that the core IP was less robust than had been hoped. A dual commercialisation strategy has therefore been executed to maximise the commercial potential of the underlying technology while reducing the associated risks to an acceptable level:

- In one application area a two-year co-operative research agreement has been struck between the parent institution, an overseas university with complementary research and IP interests, and a major Japanese company that will undertake end-product manufacturing and distribution.

- A separate company has been formed by the host institution, backed by a high net worth individual with a strong existing relationship with the relevant university Department, to develop and exploit a range of other applications of the core technology.

The academic inventor, who has since left the university to pursue other career interests, acts in a consultancy capacity to both the research collaboration and the university.

These examples illustrate how the Competitions have, in the words of one participant, “helped academics better appreciate that there may be many ways in which their original idea could be pursued, but more importantly realise that the key to success lies in paring a big, expansive idea down in to a number of tightly focussed, distinctive niches, each of which will probably require a different approach and, possibly, a different team to pursue it.”

Conclusion

As the above analysis indicates, the first two Competitions have had a significant and beneficial impact on participants’ understanding of and attitudes towards commercialising their research. More importantly, notwithstanding an adverse funding environment, a number of them have made good initial progress in converting their ideas in to commercial reality.

Participants' suggestions for the content and delivery of future Business Plan Competitions

During the qualitative interviews participants were asked to identify how, with the benefit of hindsight and in the light of their subsequent commercialisation experience, the Business Plan Competitions might be further enhanced so as to increase the value derived by future participants. They were asked to consider this issue from two perspectives:

- The Competition format – what aspects of the competition format were most effective and how could it be further improved with regard to the delivery mechanisms used?
- Content – in light of participants' subsequent experience, did the training content cover the right topics and in the appropriate level of detail? What other topics or key messages should be included to reflect the reality of commercialisation, as experienced by them?

A wide range of responses was received, the main ones of which are set out in Appendix B. However, a number of key themes emerged, as set out below.

Competition format and delivery mechanism

Interviewees were very complimentary about the overall competition format. Their main suggestions were:

1. **To build a further workshop in to the mentoring phase of the Competition** to address some of the issues introduced in the initial workshop in more detail, in particular the following topics:
 - a. Tools and techniques for analysing markets and competitors effectively
 - b. Sources of seedcorn funding and business angel networks, and how to approach them
 - c. Explain the differences between equity and debt and the advantages and disadvantages of each
 - d. Frameworks for structuring the deal forged between academic founders and their institution, because this is likely to be the first deal in which founders will be involved
2. **Extend the availability of coaching support to the post-Competition period.** This was a recurring theme among interviewees. The rationale for this was four-fold:

First, most teams found their coach invaluable in helping to identify and clarify the key issues they needed to address and in helping them crystallise their thinking. A high proportion of interviewees commented, however, that there was still much to do once the Competition had ended, and that being able to call on that resource in the months that followed would have been very useful to them.

Secondly, interviewees repeatedly commented that there were inevitably periods when they suffered setbacks or appeared to hit a brick wall, and that having someone to motivate, encourage and help them navigate the way forward would have been a great help.

Thirdly, the coach's advice and support would have been useful in helping them frame and negotiate their deal with their host institution.

Finally, the Competition timeframe had, for some teams, enabled them only to identify and begin to address some of their key issues. It was somewhat later, once their technology had developed further or their understanding of the competitive landscape had improved, that the coach's help in evaluating would have been equally, if not more, valuable.

3. **Enable teams to bank their unused mentoring units so they're available for use over a 12-18 month period post-Competition.** A number of teams observed that at the time of the Competition their business idea – and in particular, their technology – was not sufficiently advanced for them to make effective use of the professional service providers' mentoring input. Intellectual property and deal structuring advice were two areas highlighted in this regard. One team commented – correctly, in our view – that teams are likely to be of more interest to mentoring firms at that later stage as they are by then more likely to be in a position to become fee-paying clients.
4. **Provide access to market analysis databases/reports during the initial and mentoring phases of the Competition** to enhance the quality of teams' understanding and analysis of the competitive landscape. The suggestion is that BBSRC is probably in a good position to negotiate either preferential rates or free access to such resources from one or more content owners. Such databases are beyond the financial means of most teams, but provide insights that are vital to developing a realistic business plan. A couple of teams who have since secured funding that has enabled them to access such resources observed that they would have saved significant time and effort if they had been able to tap in to those resources from early in the Competition process. The knock-on benefit to the BBSRC would be the improved quality of plans generated and hence increased kudos for the Competition.
5. As an adjunct to 3 above, **recruit a panel of legal/ IP and accounting firms prepared to provide advice to teams at preferential rates negotiated with the BBSRC.** Teams would, of course, be liable for the fees incurred. Part of the rationale is that it is difficult for teams to know whether the advisers they are using have the required levels of expertise. This has been a real issue for teams who are, at best, encouraged, or, at worst, compelled to use advisers selected by their institution. Interviewees felt that it would have been helpful for them to be able to select advisers who have, to some extent, received BBSRC's imprimatur as firms with a proven ability to service the needs of biotech-focussed businesses. Teams were clearly not

suggesting that BBSRC should be held to account for the advice received from a panel firm, merely that the existence of such a list would reduce the guesswork involved in an important decision area, and give them greater leverage to argue the case for appointing someone other than their institution's nominee.

Suggested content enhancements

Appendix B identifies a range of proposed content enhancements, along with participants' suggestions as to where in the Competition they might best be introduced.

The key suggestions made were as follows:

1. In the intellectual property area:
 - a. To place significantly more emphasis on freedom to operate issues as this is an often overlooked aspect of one's IP position;
 - b. To provide more detail regarding the likely timescales and costs involved at each stage of the patenting process;
2. In the financing area:
 - a. To emphasise the fundamental importance of cash-flow planning far more and in particular the factors that are most likely to have an adverse impact on cash-flow. The prime example cited by interviewees was the significant time-lag between initiating discussions with a potential customer, securing a contract, and then being paid. Service-based businesses all emphasised this point.
 - b. As mentioned above, to explain the differences between equity and debt and their respective advantages and disadvantages. Three teams observed that the residual impression they had picked up from the training was that debt is both an unrealistic and undesirable option, whereas its non-dilutive character makes it a potentially attractive form of financing.
3. In the deal negotiation area, guidance as to what constitutes a fair deal as between the academic founders and their host institution, and the factors that need to be considered, based on real-life examples. It was acknowledged that this might be best left until the mentoring phase.
4. Generally, to place more emphasis on the difficulties of commercialising research and the potential downsides for the individual. A recurring theme was that teams had been given too easy a time during both the training and the coaching, and that the rigour with which their ideas and plans were scrutinised did not reflect the harsh realities of the commercial world.

There is clearly a fine dividing line between encouraging academics to commercialise their research outputs, and giving them too rosy a picture of the commercial world. This study clearly shows that the Competitions have achieved two of their key original objectives, namely to enhance commercial awareness and to stimulate commercialisation activity.

Against a general background of increased commercial awareness among academics, we believe that the challenge for future competitions lies in exposing teams as much as possible to the level of scrutiny that they will encounter in the marketplace. Key to this, we believe, is some form of technology and IP review relatively early in the Competition process – perhaps an initial IP scan by an IP specialist – combined with a more detailed technology and IP review when outline plans are assessed. At present it is possible for a team to progress all the way through, and even win, the Competition based on a very weak or even non-existent IP position. Indeed, last year’s winners have subsequently found that their IP position was significantly less strong than they thought.

Product pricing and pricing strategy is another area in which teams felt that greater scrutiny of their ideas would have been beneficial. The “Key messages” section of Appendix B lists their main observations on this issue.

The overall message is that teams felt they had been let off somewhat lightly, compared to the treatment meted out to them by the commercial world. Whether or not their enthusiasm for commercialisation would have survived such rigorous scrutiny at that early stage is, however, a moot point.

Several interviewees said the training would benefit from a presentation from an academic whose commercial endeavours had failed so they could hear first hand about why and what had gone wrong, and the lessons to be learnt from it. As one person put it, “Tell me what I shouldn’t be doing, as well as what I should.”

Appendix B lists a range of key messages that, based upon their experience since, should be incorporated in to, or given greater emphasis, in the Competition.

Appendix A Methodology

This study was performed between July and 17th September 2003. It comprised two main phases:

Quantitative research:

Efforts were made by e-mail and by telephone during the week commencing 21 July to contact the team leaders of all 32 teams selected to go through to the mentoring stage of the first two BBSRC/MRC Business Plan Competitions. Contact was established with 30 of the teams, who were invited by e-mail to complete and return the survey questionnaire shown in Appendix A. Target respondents were subsequently e-mailed either once or twice to encourage them to respond. Completed questionnaires were received from 20 of the 30 teams contacted. A total of 20 responses were received, representing a 62.5% response rate from past participants.

Qualitative research:

A telephone interview, lasting between 20 and 90 minutes, was subsequently held with 18 of the 20 respondents. The other two did not wish to participate in the qualitative element of the research.

The objectives of the telephone interviews were to:

1. Clarify and expand upon the quantitative data provided in the responses to the questionnaire;
2. Gain an understanding of the progress made by teams in commercializing their research since the competition and the key issues they had encountered;
3. Seek respondents' views on which aspects of the competition had been most beneficial and useful to them, and their suggestions as to how the format, content and execution of the competition might be enhanced for the future.

Before each interview the interviewer advised respondents of the reasons why BBSRC have commissioned this research and confirmed that all comments made would be treated in strict confidence and would only be reported to BBSRC on an unattributable basis. This was felt necessary in order to elicit as honest and complete a response as possible from interviewees.

Interviews were held between 18 August and 17 September.

Appendix B Participants' suggestions for the content and delivery of future business plan competitions

Delivery mechanism and format of competition

Key:

+ = A highly regarded aspect of the delivery mechanism/format of the Competition.

- = A negative aspect of the delivery mechanism/format.

S = A suggested change to the delivery mechanism/format

+ Overnight element of two-day workshop very important because of opportunity it provides for networking.

- Limited access via the Competition to technology development advice

- Using venture capitalists as mentors (NB VCs have not been used since the first Competition because of their destructive rather than constructive criticism of propositions put in front of them).

S Fund access for teams to market analysis databases/reports during the initial and mentoring phases of the Competition to enhance the quality of their competitor/market analysis and understanding. Rationale:

- Such databases are beyond financial means of most teams, but provide insights that are vital to developing a realistic business plan.

- Save significant time and effort, thus fast-tracking the development of robust propositions.

- Increases quality of business plans produced, and thus enhances the kudos and standing of the Competition and its organisers.

S Coaching post-competition, delivered locally.

S Ongoing access to an independent, trusted third party to discuss ideas/issues.

S Reduce length of mentoring phase – will lead to a better, more concise, more focused business plan.

S Enable teams to bank their mentoring units so they are available for use over, say, an 18 month period. Rationale:

- Teams might not be sufficiently advanced during the mentoring phase to be able to make best use of their mentoring units ("We found that we were meeting mentors because we didn't want to lose the opportunity of making contact with them, even though we weren't far enough down the tracks to make good use of their time. This was particularly so with the patent agents –

we would have really benefited from their advice about twelve months later on.”)

- Many of the issues for which mentoring support is needed develop and unfold over time, so repeat contact over a longer period is desirable.
- Mentors would benefit as teams are more likely to be in a position to become fee-paying clients when they're further developed and have raised some initial funding.

S Slower build-up with regard to volume of knowledge communicated.

Rationale:

“The volume of information initially delivered is overwhelming and takes time to assimilate. This is particularly so, given that the concepts being introduced are alien to a large part of the audience. Because of this, it's easy to not appreciate the relevance of an issue, or under-estimate its complexities and subtleties. It would be helpful if the concepts and issues, or at least the detail that lies behind them, could be introduced over time, perhaps with materials being available on a draw-down basis or as an online resource, for example.” – CEO, healthcare therapeutics start-up

S Ability to access past competitors for help and advice during the course of the Competition on how best to tackle the Competition and make best use of the available resources, including the coaches.

S Encourage teams to access other mentor networks more assiduously once the Competition is over to provide continuity and maintain momentum – for example, Business Link, regional biotech networks etc

Suggested enhancements to programme content

Key: The letters below indicate the point in the competition at which the proponent suggests the enhancement is made. Where options are stated, the proponent's preferred option is shown in bold text:

IW Initial training workshop

LW Launch workshop for Mentoring phase

MP Mentoring phase

MW An additional workshop during the mentoring phase

PC Post-competition, as an element of ongoing support to teams who were selected to go through to the mentoring phase, whether or not they made it to the Finals

SA Supporting activity, held independently of the Competition, but supporting the achievement of the Competition's overall goal of increasing the extent and quality of commercialisation activity among its research community.

IW Provide access to illustrative real business plans that have secured funding to provide a clear idea as to what is involved, and the quality of thinking, market and financial analysis required.

IW Include a case-study based on a licensing deal and one based on a spin-out, identifying the pitfalls of each.

IW Place much more emphasis on freedom to operate issues in the IP section as it is the Achilles heel of a high proportion of ideas.

IW More detail regarding likely costs and timescales involved in patenting innovations.

IW Place far more emphasis on the potential down-sides of commercialisation, and the risks to the individual.

"I have seen several colleagues here in the university and elsewhere who've been encouraged to set up companies, without sufficient thought and planning, only to see the companies collapse and fail. As a result, expectations all round have been disappointed. Their failure has cast a shadow over those of us who have worked extremely hard to get it right. This hinders our own ability to make progress, raise investment and, most importantly, be treated as serious players, rather than as academics playing at business, by potential customers." – CEO, service company

IW Include case-studies on businesses that have failed and lessons learnt from them. In particular, from an academic whose business failed, despite significant effort on his/her part, and whose academic career was set back by a number of years as a result.

"This would provide a much needed dose of realism, because the personal risks are significant and it's all too easy to be swept along on a wave of excitement and enthusiasm." – Academic whose original idea did not reach fruition, but who has subsequently started a different business in a related area.

IW Increased emphasis on pre-eminence of cash-flow as management concern in a fledgling business

IW Increase emphasis on debt (in particular, the Small Firms Loan Guarantee Scheme) as a desirable source of funding as it does not dilute equity.

- IW/MW** Increased emphasis on market analysis and competitor analysis, including training on the available tools and methods
- LW/MW** Sources of seedcorn funding & business angel networks
- MP** Increased help and support re identifying and tapping in to sources of transitional funding, i.e. funding the emerging business during the period from being a nascent idea to receiving its first round financing.
- MW/PC** Session on “What is a fair deal?” – perhaps during Phase II (mentoring) stage of the competition or even post-Competition – based on a number of illustrative, real-life deals. Main focus should be on university-academic founder deal structures as this will be the first deal negotiation in which most participants will be involved.
- MW/PC** Explain differences between equity & debt and advantages and disadvantages of each. Important because the company’s structure is a key issue for the ongoing success of the business and the satisfaction of the founders.
- PC/SA** How to value the IP that the company starts with (or, alternatively identifying those who can help you do so). Identify the various options and models available, and include tech transfer offices as participants. Key objective should be to identify a mechanism for valuing the IP contributed by the university/PSRE so the academic founders understand the justification for the institution’s equity stake.
- PC** Investors: who to approach and how to go about it – practical advice on identifying the factors to be considered when short-listing target investors, understanding each target investor’s investment criteria, putting together your pitch (presenting your idea to them at the first meeting, not the business plan) etc. Emphasise difficulty – but absolute necessity – of communicating your technology and its benefits clearly and succinctly.
- LW/MW** Evaluating potential market size and assessing market entry routes and strategies (pricing, identifying the right entry points in the organisation etc).
- SA** Develop the SBRI initiative as a stepping-stone towards funding for BPC ideas in a harsh financial environment (suggestion made by a team whose SBRI bid had failed, but who were nonetheless extremely complimentary, stating that” BBSRC & NERC stand apart from the other research councils in taking the aims and objectives of SBRI seriously”.

Key messages

- Setting up a company is not a part-time job.
- Strategic issue = who do you want as customers? Resist the temptation to take any work that is offered to your fledgling business.
- When pitching to both investors and potential customers, understand the value of brevity. Conciseness and precision of message pays dividends.
- The importance of costing and valuing your time as an academic: if you remain in academia you must charge the company for your time on a realistic basis in order that the company can identify the true cost of delivering its products or services to the market.
- Business development, which demands an optimistic view about the company's ability to deliver, does not come easily to academics, who are conditioned to seeking certainty before feeling able to commit to a required deliverable.
- Securing and maintaining client relationships: arouse their interest, manage their expectations, and consistently over-deliver.
- You must be utterly realistic about how much of your time will be required in the early days and plan ahead accordingly, because it is the academic's technology that is new and innovative and which is going to be the foundation of the fledgling business. For example, get the university to provide you with a post-doc to run your academic lab for you during the company's first year.
- The excitement and fascination to an academic of setting up and running a company will decline over time, so let others with commercial experience run the company with the academic's input focussed on technology development via a consultancy arrangement.
- Set realistic milestones for handing the reins over to others – and stick to them.
- Don't fall in to the trap of thinking that control is more important than your academic freedom. Insisting on a majority stake will probably lead to under-capitalisation and poor management. A minority stake is both realistic and, in many cases, a shrewd move, because it's more likely to give you access to both the funding and quality management that you need for the business to succeed.
- Commercial success depends far more on good marketing than on good technology.
- Need to focus closely and continuously on cash-flow; if you don't you'll have no business.
- You have to understand the customer's buying process. For example, rather than trying to sell a £50k contract from the outset, you're more likely to win the business by splitting it in to stepped phases of a few thousand pounds each, as they are more likely to fall within the spending limits of individual scientists.
- Beware: the lead time in converting an opportunity in to a contract is inversely proportional to the size of the target customer organisation.
- The key skill you need in order to succeed: the ability to anticipate problems.

- Evaluate your suppliers extremely rigorously as perceptions of your business are likely to depend to a large extent on the extent to which they meet your need effectively.
- Hidden costs can kill your business – for example, insurance. You'll need at least twice the money and twice the time you expect to get your business off the ground.
- Manage your marketing costs carefully – small conferences can be very useful in establishing meaningful contacts and having productive meetings; large conferences, on the other hand, can be a waste of time and money.
- The trick is to pare your original large idea down and focus wholeheartedly on small, distinct and defensible niches

Post-competition support

- S Post-competition support would be helpful in five areas:
 - i) providing ongoing access to useful networks of contacts
 - ii) motivation and continuing encouragement
 - iii) information-sharing as to where one can access the expertise you will require
 - iv) advice and support regarding the next stage in developing the business, for example, the terminology used by investors, deal negotiation, and cashflow management.
- S Invite those who did not make it to the Finals to future events
- S Ongoing access to a mentor with deep industry expertise
- S Ongoing access to legal support, perhaps via a panel of firms with whom BBSRC has negotiated access at preferential/reduced rates – of particular value when negotiating terms with one's institution.
- S Ongoing financial mentoring, perhaps via a panel of accounting firms with whom the BBSRC has negotiated access at preferential/reduced rates.
- S Access to a database of non-execs with a proven track record of supporting early-stage high tech start-ups (“We have wasted a tremendous amount of time trying to identify non-execs who can truly help us develop the business. In the first instance, we didn't know where to start looking. Then we had a lot of false starts.”)

Quotable quotes

“The Army was a joke by comparison – the last year has been the toughest of my life by far.”

“I would not have set the company up, but for the Business Plan Competition.”

“Mentoring on the content of our business plan and on the financials was extremely helpful.”

“The competition has had a definite knock-on effect in terms of stimulating my colleagues to look at commercialising their work.”

“The Competition gave me the ability to approach companies with confidence in a way that it could only have dreamt of before.”

“The learning and insights that I gained from the Competition have fed through in to my teaching on our Chemical Product Design course in a very positive way.”

“I had had the idea for some time and the Competition was the stimulus for me to give it a go.”

“I valued the mentoring greatly, and only wish it had been available for longer.”

“Our involvement in the Competition has had a definite knock-on effect in terms of stimulating commercialisation by other colleagues in our Department.”

“The Competition has had a significant impact on our approach to selecting new research projects. We now pay very close attention to IP issues in deciding which new projects to pursue, and now make sure that we have a proper audit trail to protect the new technologies that we are developing.”

“The Competition was extremely well organised, with just the right number of meetings. Having a coach to talk issues through with and to help make sense of things was immensely valuable.”

“The demands of commercialisation, particularly via a spin-out, are very difficult to square with one’s academic commitments. It’s noticeable that most academics that have gone down the commercialisation route tend to be coming up to a natural break in their academic career or perhaps are at the end of their academic career.”

“Taking part in the Competition encouraged me to develop metagenomics as an area of academic research, and this has led to us raising substantial funds from the EU to take this further. So, there’s been a double-whammy. First, I have commercialised my original idea, albeit within the confines of my academia. Secondly, it’s provided a major impetus to my academic research.”

“Universities are hydra-headed systems. On the one hand, they claim to encourage commercial activity; on the other, they tell you to do contract research only if it doesn’t interfere with your research.”

Appendix C: Survey questionnaire



We would be grateful if you could spend a few minutes completing this questionnaire. Your response will help us identify the extent to which the Bioscience Business Plan Competition initiative has encouraged past participants to commercialise their research outputs. Your responses will be treated in strict confidence and will be aggregated with those of other respondents. **Your data and comments will not therefore be revealed on an attributable basis to either the BBSRC or any other third party.**

If any of the members of your original team have subsequently pursued other commercialisation opportunities elsewhere please advise us and we will contact them separately.

If you have any questions regarding this questionnaire please contact Keith Binding on 01295 817635.

1 **Completed by:**

2 Have you commercialised the idea upon which your Business Plan Competition entry was based?

Yes	No

3 If Yes, how likely is it that you would have sought to commercialise your BPC idea, or any of your subsequent research outputs, had you not participated in the BPC?

Highly unlikely	Unlikely	Possible	Likely	Highly likely

4 If Yes, which of the following best describes the commercialisation route that you have pursued (please tick one option):

Formed a spin-out company based on that technology	
Licensed the technology to third party(ies)	
Sold the technology to a third party(ies)	
Other (please describe)	

--	--

- 5 If you have not commercialised the idea upon which your Business Plan Competition entry was based, please rank the relevance of each of the following factors in your decision not to commercialise your idea, using the following scale:
 0= Not at all relevant 1= Relevant
 2= Very relevant 3= Critical factor

	Relevance			
	0 - Not at all relevant	1 - Relevant	2 - Very relevant	3 - Critical factor
Lack of identified market need				
Identified market need, but overwhelming dominance of existing players				
Lack of clear, defensible intellectual property position				
Unable to attract external investment				
Lack of commitment to idea across the team				
Lack of encouragement from our institution				
Lack of time given academic commitments				
Other personal considerations				
Pursued promising alternative commercialisation opportunity instead				
Other (please specify)				

- 6 If you have not commercialised the idea upon which your Business Plan Competition entry was based, have you commercialised any other of your research outputs since participating in the Business Plan Competition?

Yes	No

- 7 If Yes, which of the following best describes the commercialisation route that you have pursued for those other research outputs (please tick one option):

Commercialisation route	
Formed a spin-out company based on that technology	
Licensed the technology to third party(ies)	
Sold the technology to a third party(ies)	
Other (please describe)	

- 8 If you have formed a spin-out company, whether or not based on your original BPC idea, please state:

How many Full-Time Equivalent personnel the business employed as at 30 June 2003	
Total R&D spend (£000s) by the company from date of company formation to 30 June 2003	
Total revenues generated (£000s) by the company from date of company formation to 30 June 2003	
Total funds raised (£000s) since formation to 30/06/2003 from each of the following sources:	
- Grants	
- Proof of Concept Award (if applicable)	
- Management	
- Seed-corn funding	
- Business angels	
- University Challenge Fund awards	
- Regional Development Agency funds	
- Venture capital (excluding University Challenge & Regional Development Agency funds)	
- Other private equity, including family & friends	
- Loan/debt finance	
The number of patents that have been assigned to the company since its formation by:	
- Your institution	
- Other organisations	
The number of patent applications submitted by the company since its formation	
The number of exclusive licences of intellectual property that have been granted to the company since its formation by:	
- Your institution	
- Other organisations	
The number of products launched by the company since formation	
The number of services launched by the company since formation	
The number of strategic alliances/collaborative deals that the company has secured since formation with:	
- Other commercial organisations	
- Academic research organisations	

- 9 Regardless of the commercialisation route pursued, please state:

How many licences of your technology have been granted to third parties since participating in the Business Plan Competition	
The total initial value of those licences (£000s)	
The total potential value of those licences over their lifetime (£000s)	
How many licences of third party technology you have taken out since participating in the Business Plan Competition in order to commercialise your research outputs	

10 Regardless of the commercialisation route pursued, please state:

How many contracts, based on the commercialisation of your research outputs, you have won since participating in the BPC	
The total initial value of those contracts (£000s)	
The total potential value of those contracts over their lifetime (i.e. including potential milestone payments, royalties etc) (£000s)	

11 Regardless of the commercialisation route pursued, to what extent has it been necessary to either clarify or strengthen your intellectual property position in order to commercialise it (please tick one option):

Not at all necessary	Desirable, but not necessary	Necessary	Absolutely essential
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12 Please rate the importance of each of the following factors in developing a sustainable biobusiness, using the following scale:

0= Not at all important 1= Important
2= Very important 3= Essential

Issue	Importance in developing a sustainable biobusiness			
	0 = Not at all important	1 = Important	2 = Very important	3 = Essential
Novelty of business idea				
Clear intellectual property position				
Clearly defined market need				
Experienced management team				
Understanding of competitors and sources of competitive advantage				
Appropriate mix of commercial and scientific skills				
Realistic business strategy				
Robust cash flow forecasts				
Clear exit route for investors				

- 13 Please rate the extent to which your participation in the Business Plan Competition enhanced your awareness and understanding of the importance of each of the following factors in developing a sustainable biobusiness, using the following scale:
 0= No increase in my awareness and understanding
 1= Slightly greater awareness and understanding
 2= Significant increase in awareness and understanding
 3= Very significant increase in awareness and understanding

Issue	Increase in my awareness & understanding			
	0	1	2	3
Novelty of business idea				
Clear intellectual property position				
Clearly defined market need				
Experienced management team				
Understanding of competitors and sources of competitive advantage				
Appropriate mix of commercial and scientific skills				
Realistic business strategy				
Robust cash flow forecasts				
Clear exit route for investors				

- 14 With the benefit of hindsight, please rate the extent to which participating in the Business Plan Competition has (please tick one option in each case):

	Not at all	Somewhat	Significantly	Very significantly
Influenced your subsequent selection of research projects				
Influenced the execution & direction of those research projects				
Better equipped you to identify research outputs with commercial potential				
Better equipped you to identify the most appropriate commercialisation route for your research outputs				
Increased the attractiveness to you of commercialising your research outputs				

Please add any additional comments that you wish to make in the Additional Comments box below.

Additional Comments:

Thank you for taking the time to complete the questionnaire. We would like to follow up with a 15-20 minute telephone interview. Assuming that you are happy to participate, please list below, in order of preference, up to three times and dates on which it would be convenient for us to contact you for that purpose. If at all possible we would like to complete the telephone interviews by 22nd August.

My preferred times and dates for a telephone interview are:

Date	Time (office hours)	Telephone number at which you will be available
1.		
2.		
3.		

We will e-mail you to confirm the time and date on which we will call you.

Once again, many thanks for your input – it is greatly appreciated.

Please either e-mail your completed questionnaire to MarketResearch@criticali.net or fax it to 01295 817601.