Extracting Ideas from Meat Research

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The purpose of this guide is to provide assistance to researchers in identifying knowledge arising from their work that may be of interest to the meat sector. The step-by-step approach outlines how to extract commercial ideas from new and existing research projects such as those funded by the Food Institutional Research Measure (DAFF).

An Approach to Extracting Ideas from Meat Research

STAGE 1 - Compiling a database of projects

A database is compiled with a list of all meat research projects ongoing within the research organisation or third level institute. This comprehensive list should be reviewed on a regular basis to check and monitor the status of all projects and elicit if there are any exploitable ideas or technologies emerging. The following details should be recorded in this database:

- The title of the project
- The funding body
- The partners involved in the research
- The name of the project manager
- Industry involvement

STAGE 2 - The extraction of knowledge and identification of potential commercial technologies generated during the development and execution of R&D projects

This is conducted through personal meetings and interviews with the project manager and/or primary researcher on relevant projects. Interviews are led by a dedicated person or team with technology transfer experience who is independent of the research project. A simple two page template (Appendix 1) is used to record preliminary information on the technology, on its inventors and on its possible exploitation.

STAGE 3 - The evaluation of ideas as potential commercial technologies

This stage considers the idea or technology extracted in Stage 2 and examines its potential application to the meat industry. This evaluation is also carried out by a dedicated person or team with technology transfer experience but with no direct involvement in the research project concerned. The use of this template (Appendix 2) allows the idea to be appraised under specific sub-headings;

- Risk
- Advantages
- Applications
- Markets and Competition

- IP and other Protections
- Regulatory and Liability Issues

A scale from 1 (very low or not realised or none) to 4 (high or realised or yes) is used to evaluate each idea and scores are assigned to each question by the independent evaluator. An interpretation of each of the criteria and their significance is provided on the template. The average score across the questions is calculated and a final score over three indicates that the idea may be relevant for protection and have a commercial application, whilst a value of 1 suggests that the idea should be investigated further as it probably has little commercial potential.

STAGE 4 - Intellectual Property (IP) Protection

If the researcher or inventor feels they have an idea that may warrant Intellectual Property (IP) protection it should be brought to the attention of an IP or Technology Transfer officer. Based on discussions, the TT/IP officer will decide if the idea may possibly be patented or protected in another form. The inventor(s) will be asked to complete a detailed invention report form (Appendix 3). The completion of the invention report form allows a comprehensive evaluation to be carried out on the IP and a decision to be made regarding the most appropriate form of protection and exploitation. Only inventions at an advanced stage of development, with clear commercial potential will be considered for patenting. However, if patenting is not feasible, there may be other appropriate ways to protect the IP, such as copyright, trademark or secret know-how. The TT/IP officer will advise on the most appropriate form.

After having described and evaluated any potential commercial technologies from ongoing or completed R&D projects, it is necessary to keep on working with the selected knowledge in order to extract the most interesting ideas and determine how they can be developed and ultimately transferred effectively to the meat industry.

APPENDIX 1

STAGE 2 – IDEA DESCRIPTOR

Name/title of the selected idea:

Identification number: **Date:**

Field of technology	
Key words	
Research Project (RMIS number)	
Organisations and/or people involved in the selected idea (List all organisations and individuals with an interest in the idea, and describe briefly the role of each.)	
Inventor(s) of the idea	
Idea description [1] **a) brief description of the general principle** **b) problems solved by invention/innovation**	
Current state of art [2]	
Principal potential application areas and markets identified.	
Advantage(s) of invention/idea (technical and/or commercial) to the meat sector [3]	
Other notes or comments	

[1] *The description must allow a non-specialist to understand the invention/idea and its areas of application, and describe in basic terms the technical functionality of the idea.*
[2] *The state of art represents the current highest level of expertise/know-how in the matter, and the technologies used at present to solve the same problem(s).*
[3] *Factors which would establish a competitive advantage in case of exploitation within the meat sector.*

Signatures:

_____	_____	_____
Interviewer	Researcher	Project Manager

APPENDIX 2

STAGE 3 – EVALUATION OF TECHNOLOGY

Name/title of the selected idea:

Identification number:

Evaluation Date**:**

Technology Assessment Criteria	Score (1-4)	Comments
RISK		
Stage of development [1]		
Challenges still to be overcome [2]		
Average =		
ADVANTAGES		
Current alternative solutions [3]		
Current 'state of art' [4]		
Potential to improve current 'state of art' [5]		
Potential to reduce current costs [6]		
Average =		
APPLICATIONS		
Knowledge of potential commercial applications [7]		
Scope of application opportunities [8]		
Evidence of demand [9]		
Average =		
MARKETS AND COMPETITION		
Scale of potential applications [10]		
Market trends in the areas of application [11]		
Competitive situation in the relevant markets [12]		
Average =		
IP & OTHER PROTECTIONS		
Possibility of infringement of existing patent(s) [13]		
Other types of protection [14]		
Average =		
REGULATORY AND LIABILITY ISSUES		
Regulatory requirements [15]		
Potential liability [16]		
Average =		
Total (Sum of averages)		
Final Score (Total/6)		

Notes on interpretation and scores:

(1) Maturity of the idea – stage of development

1. Concept	An innovative technical idea or concept whose technical viability has not yet been established.
2. Proof of concept	An innovative idea based on technology which has been proved in principle to work in laboratory or equivalent conditions.
3. Prototype demonstrator	An idea which has been developed to the stage of a preliminary working prototype.
4. Market-ready prototype	Developed to the point of being ready to start production or to go the market.

(2) This relates to the amount of effort and resources likely to be required to develop the idea/technology from its present stage to the point of being ready for market. It is probably most useful to think of this more in relative than in absolute terms – in other words, as well as attempting to quantify the resources likely to be required, consider how major a commitment of resources this would represent in the context of the organisation(s) and/or individual(s) involved:
   1. Very major
   2. Significant
   3. Moderate
   4. Small

(3) This refers to the present situation relating to existing products or technologies generally used to meet the needs which the new idea is expected to address. The intention is to assess how difficult it will be for a new idea/technology/product to achieve acceptance.
   1. There are currently products or technology solutions available which are almost universally used, are not considered to be excessively expensive, and are regarded as standard solutions in the relevant sectors or markets.
   2. There are products or technologies currently available which are widely used, but are not regarded as standard solutions, and may be considered to have some disadvantages or shortcomings in terms of performance or cost.
   3. There are products or technologies currently available, but they have not gained wide acceptance because their performance is not generally considered to be satisfactory or their cost is considered to be too high.
   4. No products or technologies can be identified as currently available on the market.

(4) The state of the art represents the most advanced current level of technology/expertise/know-how in the area, whether or not this is incorporated in products now available on the market. The intention here is to assess how technically advanced the idea is compared to any other technologies or concepts which may be available or may at present be under development.
   1. This is an area which is known to be the subject of a large amount of current interest and attention. A considerable number of technologies are known to have been introduced to the market recently or to be under development, and many of them are likely to offer very significant performance and/or cost advantages over technologies or products currently in general use.
   2. This is an area which is a very specific niche application or, for other reasons, is the subject of a limited amount of interest and attention. The 'state of the art' is represented by a small number of technologies or concepts (perhaps two or three) believed to represent the most advanced level of expertise and performance currently under development. There is some evidence that at least one of these technologies (other than the idea under evaluation) may offer very significant performance and/or cost advantages over technologies or products currently in general use.
   3. The 'state of the art' is represented by a small number of technologies or concepts believed to represent the most advanced level of expertise and performance currently under development. It is not however yet clear that any of these technologies (other than the idea under evaluation) will offer significant performance and/or cost advantages over technologies or products currently in general use.

4. It has not been possible to identify any technologies or concepts currently under development (other than the idea under evaluation) which are likely to offer any performance and/or cost advantages over technologies or products currently in general use.

(5) This is intended to assess the potential of the idea to improve on the technical performance of other products or solutions currently available or known to be under development. In this context it is appropriate to make comparisons with the current state of the art (as discussed in (4) above), rather than with products or technologies currently in general use.
1. In comparing the idea to other state of the art technologies, it is difficult to identify any ways in which it is likely to offer significant or compelling technical performance advantages.
2. In comparing the idea to other state of the art technologies, it is reasonable to believe that it may offer technical performance advantages significant enough to provide a clear competitive advantage.
3. In comparing the idea to other state of the art technologies, it clearly has the potential to offer very substantial and compelling technical performance advantages to a degree which users would find difficult to ignore.
4. The idea under evaluation is believed to represent a “disruptive technology” – it is believed to have the potential to revolutionise the way in which a specific activity is undertaken or a specific problem is addressed.

(6) This is intended to assess the extent to which the idea has the potential to reduce costs for users. In this context it is appropriate to make comparisons with the products or technologies currently in general use (as discussed in (3) above), rather than with the current state of the art.
1. The idea is likely to be more expensive for users than products or technologies currently in general use (even though it may offer technical performance advantages).
2. The idea is likely to offer user costs comparable to those of products or technologies currently in general use.
3. The idea is likely to offer the potential for cost reductions for users of up to 50%.
4. The idea is likely to offer the potential for cost reductions for users of over 50%.

(7) This is intended to evaluate the extent to which potential commercial applications for the idea have been explored, identified and understood.
1. There is no knowledge of whether or not the idea has (a) potential commercial application(s).
2. On the basis of preliminary evaluation, the idea is believed to have (a) potential commercial application(s), but little or no detailed investigation has been undertaken to confirm this or to define clearly the nature of these potential applications.
3. Sufficient investigation has been undertaken to provide a high degree of confidence that the idea has (a) potential commercial application(s), but further work is still required to understand the potential application(s) in greater depth.
4. One or more potential commercial applications have been identified and investigated in detail, and this investigation has confirmed (as far as is possible at the present stage) that the idea has (a) potential commercial application(s).

(8) The intention is to assess how diverse the opportunities for application of the idea may be – in other words, is the opportunity specific and restricted, or are there many different opportunities in different areas of application?
1. The idea is believed to have only one specific potential application.
2. While the idea is regarded as having one primary area of potential application, there is a possibility that a limited number of associated potential applications may exist.
3. The idea is believed to have two or more major potential applications, and these are in significantly different areas of use or industrial sectors.
4. The idea is believed to have a wide range of potential applications across many different areas of use or industry sectors (this type of situation is sometimes described as a “platform technology”).

(9) The intention is to assess how much actual feedback and evidence has been obtained (for example from potential users or expert market commentators) to confirm that there is likely to be a real demand for products or services based on the idea.
1. No discussions with potential users or other expert sources have taken place.

2. A small number (perhaps two or three) of dialogues with potential users or other expert sources have taken place, and their reactions were only moderately positive (indicating that there could be interest in the idea, but there are still important questions to be answered).
3. A larger number (perhaps between six and twelve) of dialogues with potential users or other expert sources have taken place, and in most cases their reactions were clearly positive (indicating a significant level of interest in the idea, and confidence that it would be well received by users).
4. Extensive and detailed discussions involving a substantial number of users and some expert sources have taken place. These discussions have covered matters including technical performance, price, competition and any other relevant issues, and almost all reactions have been very positive, providing a large amount of independent evidence that the idea is very likely to be received enthusiastically by users.

(10) This is an assessment of the probable magnitude (in market/financial terms) of the opportunities for commercial exploitation of the idea.
1. The potential applications for the idea are few in number, and relate to markets which are likely to be low in value (in terms of the total revenues which can be generated). This could, for example, be because they will be local rather than international or because they will be so specialised that only limited demand will exist.
2. Although only a limited number of potential applications can be identified, at least one of these applications could represent a market of significant value (for example, a global market valued at least in the region of several hundred million Euros).
3. The total combined market value in the potential areas of application is very substantial (for example, one very large potential market, or a number of potential markets with a total global value of at least one billion Euros).
4. The potential areas of application are in global markets with very high combined total values – for example, at least in the region of several billion Euros.

(11) The intention is to consider growth trends in the markets expected to be targets for products or services based on the idea.
1. The combined global value of the markets is expected to decline in the foreseeable future.
2. The combined global value of the markets is expected to remain stable in the foreseeable future.
3. The combined global value of the markets is expected to show moderate growth in the foreseeable future.
4. The combined global value of the markets is expected to show high growth in the foreseeable future.

(12) The intention is to assess the extent and nature of the competition which may be anticipated in the markets expected to be targets for products or services based on the idea.
1. Markets are likely to be characterised by intense competition from existing well-established companies.
2. A significant level of competition can be expected, but no established players have yet achieved a dominant position in the relevant market(s).
3. It is anticipated that competition will exist, but will come from a limited number of companies which are still relatively immature.
4. No sources of serious potential competition can be identified at this time.

(13) Investigation of the possibility of any risk that the idea may infringe (an) existing patent(s) held by or applied for by others.
1. No search has been undertaken to investigate the existence of any patents or patent applications which might be infringed by the idea under evaluation.
2. A patent search has been undertaken and has identified several patents or patent applications which appear to relate to concepts or technologies similar to the idea under evaluation. There seems to be a risk that the idea might infringe one or more of these patents, and further detailed research is required to establish whether this would be the case.
3. A patent search has been undertaken and has identified no more than a few (one or two) patents or patent applications which may relate to concepts or technologies similar to the idea under evaluation. The risk of infringement is not at present believed to be high, but some further research is required to confirm this.

4. A patent search has been undertaken and it has been confirmed that there are no existing patents or patent applications which might be infringed by the idea under evaluation.

NOTE: In the event that a patent search has been undertaken and has identified existing patents or patent applications which would definitely be infringed by the idea under evaluation, this will generally indicate that any plans for commercial application of the idea will have to be abandoned.

(14) This is intended to assess the extent to which the idea may be protected by the existence of informal barriers to entry (other than legal protection of intellectual property). Such barriers to entry may include secrecy, access to specialised expertise or facilities, dependence on important tacit know-how or experience, etc.

1. There are no identifiable informal barriers to entry which would make it difficult for other organisations or companies to imitate and use the idea commercially.
2. Some informal barriers to entry may exist, but they are not believed to be likely to offer a high degree of protection.
3. It is possible to identify significant informal barriers to entry which would make it difficult for others to imitate or use the idea commercially.
4. There are clear and obvious informal barriers to entry which would make it very difficult or impossible for others to imitate or use the idea commercially.

(15) This refers to the need to comply with regulatory or legislative requirements for products or services based on the idea (for example: clinical trials, product approvals, etc.).

1. It will be necessary to comply with onerous regulatory requirements which will be time-consuming and expensive.
2. Regulatory requirements will be significant, but costs will not be excessive and major delays may be avoided by good management of the necessary processes.
3. Regulatory requirements will be limited, and are not expected to impose significant costs or delays.
4. No regulatory requirements will apply.

(16) This is intended to assess the level of potential product or service liabilities which will be associated with commercial application of the idea (for example, would a product failure be a serious safety risk?).

1. Potential liabilities will be very severe (for example because products will be used in safety-critical applications and any defects would be likely to have fatal consequences).
2. Potential liabilities could conceivably be significant, but it is considered unlikely that such liabilities would arise in practice.
3. Any potential liabilities are considered to be limited and to be unlikely to arise in practice.
4. No significant potential liabilities are believed to exist.

APPENDIX 3

SAMPLE INVENTION REPORT FORM (©Teagasc)

To qualify for patent protection, an invention must be

(i) novel ie it must not have been disclosed to public before patent application is filed and must not have been patented by anyone else previously
(ii) inventive-an inventive step not obvious to someone skilled in the relevant field
(iii) useful ie capable of industrial application

Please mark all correspondence relating to this as 'CONFIDENTIAL' and password protect any email messages disclosing invention details.

1. INVENTION DETAILS:

a. Title of invention:

b. Technical Description (use additional sheet if necessary):

c. Novelty and advantages over existing technologies:
How is this invention different to existing solutions? What advantage does the new invention have over existing similar technology?

d. Is there a model or prototype available or has it been demonstrated practically? If so, what stage of development is it at?

e. Potential Commercial Application/Possible interested companies:
Indicate possible commercial uses or applications of the invention, either in the short or long term. Have any discussions taken place with outside parties?

f. Have any patent applications already being filed in this area by this organisation? If so, provide details.

g. Any further comments/relevant information:

2. DISCLOSURES

Valid patent protection depends upon the invention not having been previously disclosed to the public in any way; please include details on any existing or planned disclosures including: Abstract, Poster, Paper, Thesis, Media, Lecture/Seminar, Discussion with others outside of the Research Establishment, Internet or Other.

a. Has the invention been described, in whole or in part, in printed or online publications?	Yes No	Date of publication: Journal name/website:
b. Has a manuscript describing the invention, in whole or in part, been submitted for publication, or will it be? c. Has it been reviewed or accepted yet?	Yes No	Actual or expected date of submission: Expected date of publication: Journal name/website:
d. Has the invention been described, in whole or in part, in any grant application?	Yes No	Actual/expected date of submission: Grant type and code:
e. Has the invention been disclosed, in whole or in part, by any of the contributors in a <u>public</u> setting such as poster session, meeting or seminar?	Yes No	If yes, under what circumstances? *Poster, Talk, Seminar, Other* Date: _____ Location:_____
f. Has the invention been disclosed, in whole or in part, by any of the contributors in a <u>private</u> setting such as a conversation with colleagues outside the organisation or meeting with a company?	Yes No	If yes, under what circumstances? Date: _____ Location:_____ Was a confidentiality agreement in place? Yes No
g. Has a patent application been previously filed or issued by the organisation in this area?	Yes No	If yes, please give details Patent number: _____ Date:

3. MATERIAL TRANSFER:

Please indicate if any aspect of the invention was made possible, by the use of information, materials, equipment, software or the like obtained from individuals other than the contributors above, or from other organisations?

Yes No

If yes, please give details:

Was there a material transfer agreement in place, and if so, please give details?

4. POTENTIAL CONFLICT OF INTEREST DECLARATION:
Please outline any relationship that any inventor has with any third party that may influence the decision-making process in relation to commercialization of this invention eg personal interest, shares etc in companies.

5. INVENTORS/CONTRIBUTORS:
Details of all potential inventors, <u>including those outside the organisation</u> are required as well as evidence of their intellectual contribution in order to avoid invalidation of any patent application.

a. Inventor details:
Inventors must make an intellectual contribution to the invention, rather than just carrying out technical instructions. For each contributor/inventor include all contact information requested below, employer, nationality and % contribution to the invention (to be agreed among inventors).

Inventor Number	*1*	*2*	*3*	*4*
Title and full name				
Employer				
Work address & contact details				
Home address& contact details				
Nationality				
% contribution*				

b. Contribution to the Invention:
Each contributor should explain his/her contribution <u>and sign and date the last page.</u> This is to ensure that all named inventors agree on their relative contribution. Otherwise an equal sharing among inventors is assumed. <u>This should be completed by the PI or lead inventor and should be read and agreed by the other inventors.</u>

Inventor 1 Contribution (lead or main inventor):

Inventor 2 Contribution:

Inventor 3 Contribution:

Inventor 4 Contribution:

6. RESEARCH FUNDING:

***Details on funding sources is required in order to ensure that the organisation adheres to any obligations relating to IP set by the funding agency. Include the name of the research sponsor and grant code (e.g. State Agency,) and the period of time of funding*.**

Inventor 1:

Inventor 2:

Inventor 3:

Inventor 4:

7. ORIGIN AND DOCUMENTATION OF INVENTION:
Evidence of the origin of the concept and proof of the inventive step and experimentation may be required in defending patent applications, especially in USA

(a)Was the lead inventor/contributor the first person to conceive of the invention?
Y N

(b) Approximately when was the invention first conceived and how?

(c) Were guidelines to good laboratory practice followed, including signed and dated lab books? Where are results documented?

8. LITERATURE AND PATENT SEARCHES

Comprehensive literature & patent searches should be carried out during a project and when an invention has been identified, in order to find out about current developments in the specific area of research.

a. Please list keywords relevant to the invention (for search terms in searches):

b. Please identify other academic or industry researchers working in the field of the invention (close competitors):

Useful Exercises (Results to be added as appendix to back of form):

c. Please list all manuscripts and copies of all contributors'/inventors' papers and abstracts that are relevant to the invention, either as background to the invention or as disclosures, and attach copies if possible.

Y N

d. Please list and attach copies of any known competitors' papers and abstracts, review articles, key papers in the field, and any other material that you believe are relevant to the invention or can assist the TT/IP office in its evaluation.

Y N

e. Please record and attach copy of results of a search literature databases for publications relevant to the invention, and of patent searches using the keywords and competitors' listed above. Searches can be carried out on www. uspto.gov or www.espacenet.com. Please attach/include results of searches conducted.

INVENTORS' AGREEMENT:

I/we agree that the details above are correct and accurate and that I/we agree to the sharing of any future potential earnings among inventors as proposed above.

I/we agree to do everything reasonably required to assist the IP/TT in the evaluation, protection (including filing patent applications), and possible commercialisation of the invention described in this Invention Report Form. All statements made herein are true and complete to the best of my/our knowledge.

Inventor 1: (print name):

Signed: …… Date: ……

Inventor 2: (print name):

Signed: …… Date: ……

Inventor 3: (print name):

Signed: …… Date: ……

Inventor 4: (print name):

Signed: …… Date: ……

Principal Investigator/Research manager:

Signed: …… Date: ……

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Teagasc
Agriculture and Food Development Authority
Ashtown Food Research Centre

NDP
National Development Plan

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