

# SAMPLE NOVEL IP FROM TEAGASC-FROM IDF TO LICENCE

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# Novel cheese technology platform

- Novel SMART platform - manufacture of specialised protein powders and recipes & conversion into cheeses with different functional properties
- Potentially “disruptive” - wheyless cheese process
- Submitted as IDF 2007
- State funded research



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# Novelty and technical description

- development of micellar casein (MCCa) and milk protein concentrates (MPCCa) powders with different calcium-to-casein ratios
- use in the preparation of reassembled milks which are converted into cheeses and/or cheese-style products with a range of composition, sensory, rheology, texture and cooking properties, health properties and applications
- novel cheesemaking technology which does not involve the traditional whey separation step of conventional cheesemaking technology.



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# Problem addressed=Market opportunity

- Conventional manufacture of natural cheese is quite limited in terms of cost-competitive, customized ingredient solutions, reliance on a source of fresh milk and a large volume of 'unclean' whey, i.e. loss of added materials (e.g., prebiotic materials)=> eg inconsistent quality for certain cheeses, requiring heating
- Value propositions to industry/consumer
- (1) Enables cheese-making (existing cheeses) in regions where milk not readily available
- (2) Opportunity to design/control cheese characteristics -new generation innovative health cheeses
- Fits in with value add focus for Irish dairy ingredients, with global marketplace potential.



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## Stage of development/commercial applications

- Proof of concept, Limited trials on specific cheese types and certain material added
- Prototypes shown to industry
- Validation and customisation required for various cheese types
- Extensive processing adjustments required on commercial scale
- Extensive partnering with industry required
  
- 2 distinct fields/applications
  - Development of higher quality existing cheeses in territories with scarce milk supply
  - Development of health/bioactive cheeses and innovative dairy snacks



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# IDF Evaluation and follow up

- Multi step process involving novel use of protein ingredients (micellar casein powders) for range of cheese types and novel dairy products (health, bio-actives etc). Inventive step less clear
- Platform technology-not to replace conventional cheesemaking process but for niche applications esp in ingredient cheeses and health cheeses.
- Aim to license non exclusively or exclusively in fields, to multiple companies ideally
- know how and involvement of lead researcher key to collaborations with industry
- Existing clients of Teagasc were initially targeted, but Only when IP was marketed through showcasing events, did a start up company identify its potential-unforeseen market for new category of dairy based snacks-match between idea/market gap ad novel technology
- Decision to file a patent, start partnering with industries for customisation with ultimate aim to licence to these companies



*Innovative Food Product Development Cycle: Frame for Stepping Up Research Excellence of FINS*

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# Outcome

- Patent filed to cover multi step process incl manufacture of specialised dairy powders, and reassembly into cheese products, and end products
- Product/process patent-claims
- Marketed to Irish dairy industry
- Extensive collaboration started with irish company and feasibility study with start up company for new product category development
- Successful validation for specific product types
- Patent and know-how Licenses (non exclusive/ field defined) negotiated
- 2 distinct routes (niches)
  - Existing dairy company-licence in middle east for existing white cheeses (new market entry for existing company)
  - Start-up company-development of innovative snacks for global market (new products/new company)
- Products launched in 2017-royalties to start to come in-financial benefit to Teagasc and inventors and new product launches/markets for companies



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# However..

- Patent prosecution, lengthy complex process with novelty and inventive step objections and arguments
- Multiple inventions identified during examination, divisional filed also=> 2 active patent applications, (additional costs)
- amendments made to claims since filing, => narrower scope of patent, and possibility of not being granted
- Patent gone to oral proceeding-need to appeal case to ensure patent granted
- May not have granted patent, hence the importance of licensing know how in all licences to ensure need for licence to commercialise (and not linking royalty payments to valid patent claims)
- Pending patent attracted investments and partnering and was important for spin out companies to licence IP





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# Lessons learned

- Inventiveness difficult to prove, esp with multi step processes, researcher contribution key to arguing the case with examiners
- No guarantee a patented technology will be granted
- Often inventiveness objections hard to overcome despite beliefs of researcher
- Even non granted patent attracts investment and supports partnerships
- Collaboration to validate and customise technology was key to making attractive to industry to licence the IP
- Important to include all form of IP in a licence, and documented know how critical part of licensed IP in the licences

