

IPR in Industry
DTU Management Engineering
Patent Course 2011

19 Jan 2011, Morten Birkeland Charlotte Johansen Vedel
Danisco A/S, Corporate Patent Europe

DANISCO
First you add knowledge...



DANISCO
First you add knowledge...

DANISCO
First you add knowledge...

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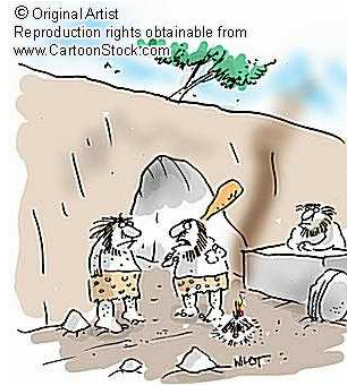
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Agenda

IPR in industry:

- The role of patents in Danisco's business system.
- Principles of handling trusted employees' inventions.
- Procedures and Principles for Danisco's acquisition and sale of intellectual property rights.
- Policies and procedures for Danisco's collaboration with universities and research institutions - in a global perspective.



"After fire and the wheel, it was only logical to invent the patent attorney."

Danisco is a focused, bio-based and market-driven ingredients provider







Product range

- Antimicrobials
- Antioxidants
- Betaine
- Emulsifiers
- Enzymes
- Flavourings
- Functional Systems
- Specialty Fats
- Specialty Sweeteners
- Starter Cultures
- Textural Ingredients

Key growth drivers

- Health & Nutrition
- Cost in use
- Sustainable solutions
- Food safety
- Renewable alternatives to petroleum-based fuel and chemicals

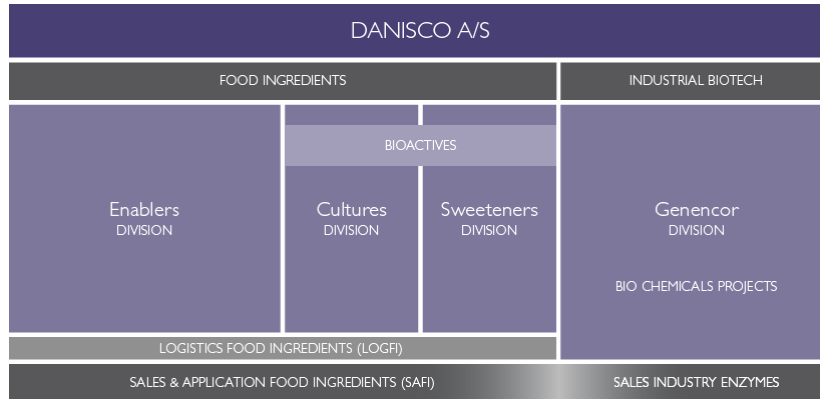
Danisco addressing global megatrends

Population		2010: 6.8 billion	2050: 9.1 billion
FOOD		Wasteful, inefficient, environmentally degrading	Efficient, environmentally neutral, waste-free in production, distribution and consumption
HEALTH		Population that is ageing, overweight and undernourished	Resources, foods, medicines that promote lasting health
ENERGY		Fossil fuel dependence, climate and security issues	Renewable energy solutions to replace oil and gas supplies
CHEMICALS		Largely petroleum-based, some harmful substances in products	Safe, efficient, bio-based alternatives to petrochemicals

Our markets - market positions

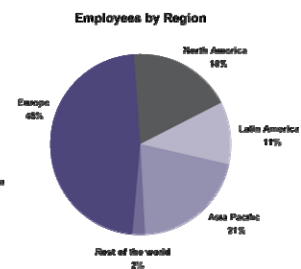
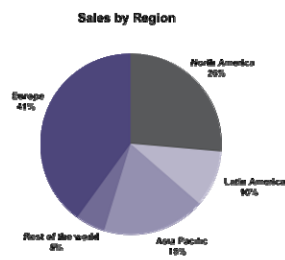
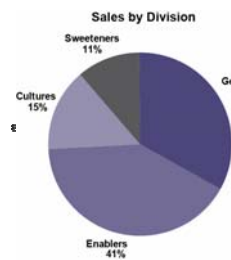
	Emulsifiers	Functional systems	Textural ingredients	Sweeteners	Starter cultures	Bio-preservation	Technical enzymes	Food enzymes	Feed enzymes
Danisco (DK)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Degussa/Cargill (USA)	✓	✓	✓	✓	✓			✓	
Kerry Group (IE)	✓	✓			✓	✓		✓	
Huber (DK/USA)			✓						
Cognis (D)	✓	✓	✓					✓	
Novozymes (DK)							✓	✓	✓
Chr. Hansen (DK)					✓			✓	
DSM (NL)		✓		✓	✓	✓	✓	✓	✓
ABF(UK)							✓	✓	✓
Tate & Lyle (UK)		✓		✓					
Danisco's global position	1	1	2	1	2	1	2	2	1

Organisational structure



Danisco - a multinational leader

- › World leader in food ingredients, enzymes and bio-based solutions
- › International presence operating from more than 100 locations in about 40 countries
- › Employees: 6,800, of which ~1,300 in Denmark
- › History of both strong organic growth and transformational acquisitions



New Patent Policy

Objectives:

- Protection of own products and technology
- Respect other parties' valid patents
- Ensure freedom-to-operate

Danisco Patent portfolio

Danisco's position at the end of 2010:

- › Patent applications had grown by 13% compared to the previous year.
- › Our patent portfolio stands at more than 9,300 patents.
- › Patent Board Scorecard: No. 8 globally in the segment Food, Beverages and Tobacco.



The Portfolio:

The patent portfolio comprise more than 9000+ active patents and patent applications

Technical Fields:

- Separation
- Crystallisation
- Coating/Spray Drying
- Genetic Modification
- Protein Engineering
- Ingredient Functionality
- Food Technology
- Fermentation/Expression
- Food safety
- Health/Nutrition

Products and Applications:

- Animal Nutrition
- Bakery
- Brewing
- Dairy Cultures
- Emulsifiers
- Feed Enzymes
- Functional Systems
- Food Protectants
- Food Enzymes
- Specialty Fats
- Technical enzymes



Value of IP

→ The total Value of Danisco's Intellectual Assets *) is estimated to be in the order of **5 – 8 Billion DKK**

→ Patents contribute to protect and enhance the value of the investments in R&D

→ The cost of the initial patent protection often represent less than 2 percent of the cost of the R&D project

*) includes know-how, recipes, inventions and trademarks

Principles of handling trusted employees' inventions.

Innovation is at the heart of what we do

- 5.4% of annual turnover is invested in innovation
- 35 innovation centres in 18 countries
- Approx 900 full-time employees (June 2010)
 - Research & development: 558 (65%)
 - Application & customer service: 302 (35%)



What is a Patent ?

- The Patentee gets an exclusive right commercially exploit the invention
- The Public benefits from publication of the invention
 - ➔ A Patent is a document issued by a national authority
 - ➔ Patentee may prevent others from commercial exploitation of the invention (exclusive right):
 - i.e. manufacturing, sales, marketing, offering for sale, application, possession, import
- For a limited time period (20 years)
- For a limited territory
- Against payment of an annual fee



What Patents cannot provide ?

- › A Patent does NOT automatically confer a right to practice the invention commercially

Because:

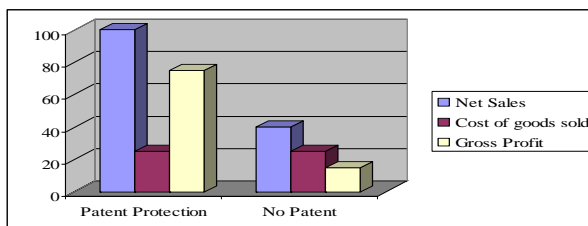
- It may be prohibited by national law
- It may require regulatory approval
- It may infringe other parties' patents



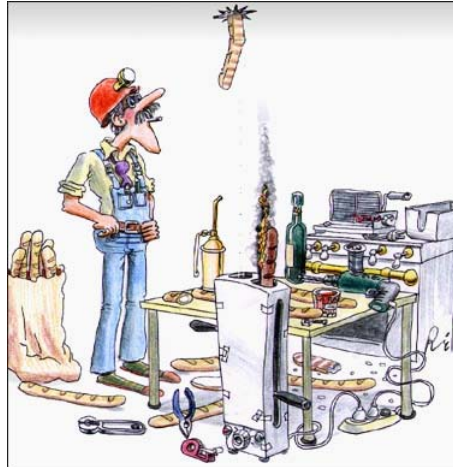
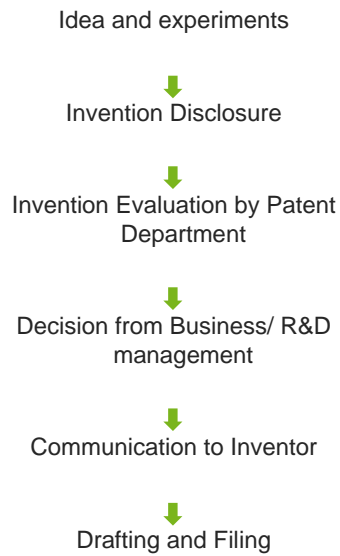
- If we like patents – so does our competitors
- Other parties' patents that are relevant to Danisco most likely to belong to a competitor
=> TROUBLE

Why are Patents important ?

- › Exclusivity is attractive from a business perspective – add value to products
 - Entry barrier to competitors
- › Patents reflects a company's technical expertise
 - Attractiveness as business partner
 - Attractiveness as employer



Principles of handling trusted employees' inventions



Short title of the invention:		Relevant Project (if any):
Relevant Division:		
Short description of the invention: <i>Maximum length of this field is 11 rows. Please use page 2 for additional comments!</i>		
Attachments:		Plans for publication of invention (samples, publications):
State of development (reduction to practice):		
<input type="checkbox"/> Complete <input type="checkbox"/> Project in progress <input type="checkbox"/> On idea level		
Estimated resources needed for completion:		
<input type="checkbox"/> New equipment <input type="checkbox"/> External manpower <input type="checkbox"/> Internal manpower		
I / We make it known hereby that to my / our knowledge I am / we are the sole and actual inventor(s).		
Danisco is entitled by virtue of the valid legislation to obtain ownership to the invention and I / we as an inventor / inventors will sign all documents that may be necessary for protecting the invention in various countries		
I / We agree to the extension of employer's four-month response to this invention disclosure to one year from the date of receipt of this disclosure.		
Inventor's name, occupation, nationality, company & home address	Place and date	Signatures

INVENTION DISCLOSURE RECEIVED (Patent manager fills in)

Danisco family no:	Division / Company:
Place:	Signature:
Date:	Name & occupation:

How to get a Patent ?

An invention; Solution to something technical

- Novelty
- Inventive step
- Commercial exploitation
- Enablement

World-Patent ?



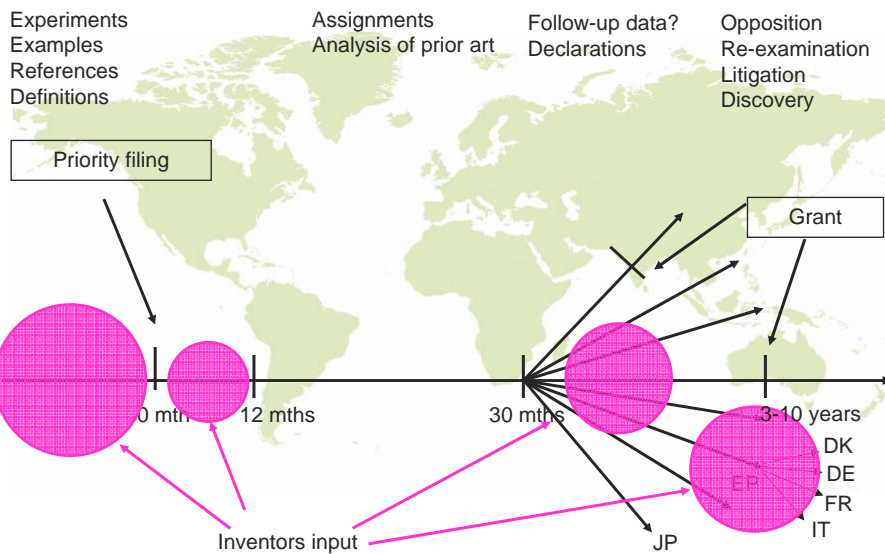
Exceptions from patenting incl.

- Discoveries, scientific theories, mathematical models, art, "contre ordre public"

Selecting territory – Filing strategy – using international law and treaties

- Paris Convention (1883); Strasbourg Convention (1963); Washington (PCT) Treaty (1970); München (EPC) Convention (1973); Luxembourg Convention (1975); Budapest Treaty (1977); WTO-TRIPs (1995); London Protocol (2008) and national laws

Inventor inputs to a patent family

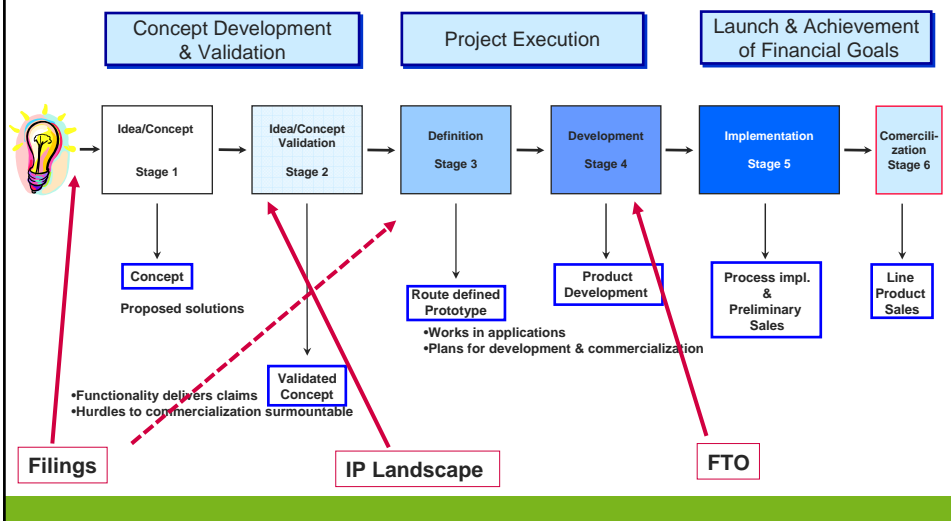


Patents in a Business Context

- ▶ Marked access:
 - Establish and maintain FTO within strategic business areas
 - Getting access to other parties' technology
- ▶ Market value:
 - Create barriers of entry for the competitors
 - Regain R&D spendings by exclusive market position and through out-licensing
 - Access to R&D/ Innovation partnerships
 - Marketing advantage by profiling company and products with high-tech image

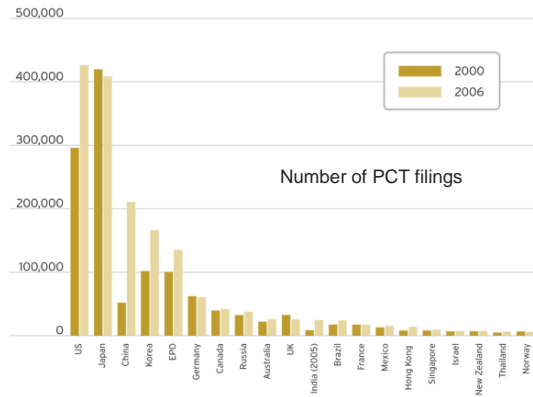


Product Development The overall principle....



Patent Landscape

- Identify the patents and patent applications within a field
 - Compound/backbone/gene
 - Activity
 - Application
 - Process/method
- Territory/ jurisdiction
- Legal status
- Searching – key technology
 - Keywords
 - Classification
- Taxonomy for categorisation
- Analysis
 - Who is active
 - Blocked?



Competitor Surveillance

Patents are a great source of information

➤ We monitor our competitors' patent filings:

- To find out where the competition is headed
- To be able to plan ahead and prepare counter actions (oppositions, re-examinations, TPOs)
- To be able to adjust R&D projects as necessary
- In order to build on the competitors technology
- To refine others technology and patent improvements to create mutual dependency



A REMINDER

What Does A Patent Provide?

- › When granted - a patent gives the patentee the right to prevent others from practising the invention
- › it does **NOT** give the patentee the right to actually sell/make anything

Freedom-to-Operate Analyses - an example

› FTO for **an enzyme product** may involve analysis of the following elements:

- ✓ Promoter/Enhancer elements
- ✓ Structural gene, mutations, substitutions
- ✓ Secretion and modifications signal elements
- ✓ Transformation vectors and plasmids
- ✓ Transformation technology
- ✓ Host or production organism
- ✓ Fermentation conditions and technology
- ✓ Downstream processing
- ✓ Formulation of final product
- ✓ Application, use, blending

› Each of which needs to be compared to dozens or hundreds of scientific publications and patent documents

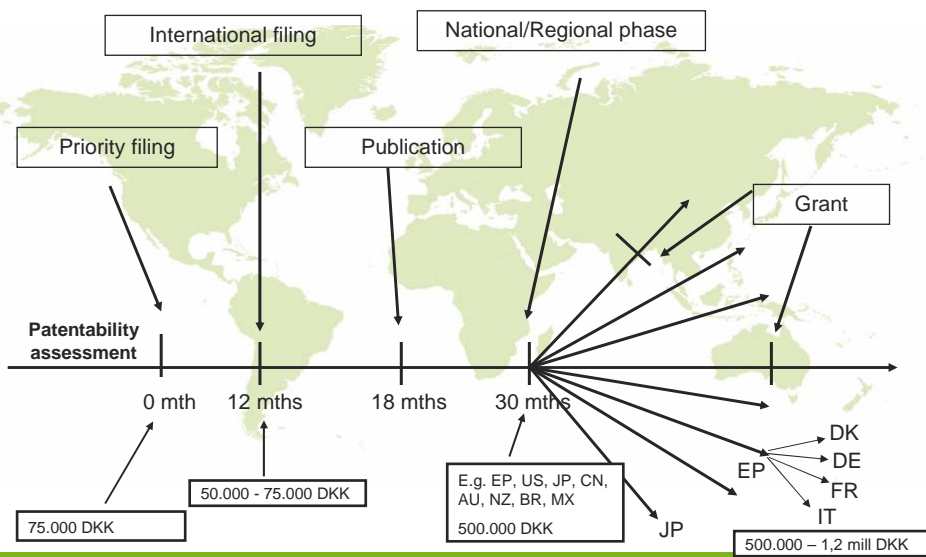


Scientist in the Industry Publication

- Ownership rights to results/inventions belongs to the employer
- A Patent is the Industrial Scientists Publication
- Non approved publication can be abuse of confidentiality
- Publications are 18 months delayed
- Scientific Publications are approved by the patent department



Cost of a patent family



Scientist in the Industry Cost and Remuneration

All patent cost are paid by the Company

Common for Scientists to be allocated to patent work

- Support to patent prosecution
- Revocation of 3th party patents

Remuneration depends on contract and National laws

- Laws for remuneration includes FI, FR, DE, CN....
- Bonus program
- **Inventions; part of the job as a scientist in the industry**

Lab note books - Do's and Don'ts

WHY? – Legal Documents

- US Patent law
 - Inventorship disputes – patent validity
 - Interference
 - Date of conception
 - Date of reduction to practice
- Litigation
 - Proof of when, where and by whom specific know how/patent rights originate.
- Keep your laboratory note books in good order:
 - They reflect the quality and significance of your work.
 - Primarily based for recording an individuals work – if you record someone else work ensure their contribution is stated.
 - They are for other people to see and possibly of very high value.
 - They may be relied upon to secure or defend intellectual property and know how.
 - Write clearly, use clear and precise language and avoid putting in opinions and speculation.



- Entries should be in chronological order
- Use the past tense – experiments were actually performed
- Ideally record experiments promptly
- Use ink, do not erase entries – errors should simply be drawn through.
- Do not leave blank spaces – draw through any blank spaces/pages & date
- Explain abbreviations & unusual terminology
- Outline experiments, and the results and their significance
- Put in the detail – precise conditions etc.
- Use note books to record lab meetings & discussions – **who said what.**
- Sign and date each note book
 - Inside front cover
 - Each entry
 - Counter signed & dated by someone independent of invention – weekly?
 - Witnesses should have read & understand what they are witnessing.

Acquisition and Sale of Assets in Danisco



Acquisition and Sale of Assets - History

1924	I/S Grindstedværket founded.
1981	Acquisition of pectin plant in Mexico
1983	Acquisition of alginate plant in France
1985	Acquisition of LBG plant in Spain
1989	Merger of Danish Sugar Corporation, Danish Distillers and Grindsted forming Danisco A/S
1990	Acquisition of pectin plant in the Czech Republic
1997	Acquisition of Borthwicks Flavours
1998	Acquisition of Beck Flavours, USA Acquisition of Wisby, Germany
1998	Danisco A/S acquires Cultor
2001	Acquisition of Florida Flavours Acquisition of Germantown
2002	Acquisition of Perlarom
2004	Acquisition of Rhodia Food Ingredients
2005	Acquisition of Genencor
2007	Divestment of Flavours Formation of strategic partnership with Firmenich
2008	Acquisition of Agtech Products Inc, Waukesha, Wisconsin, USA
2009	Divestment of Sugar Expansion in Bio Chemical Projects through partnership and collaborative agreements with DuPont and Goodyear

Grindstedværket 1924



Danisco 2011



Acquisition and Sale of Assets – Process Elements



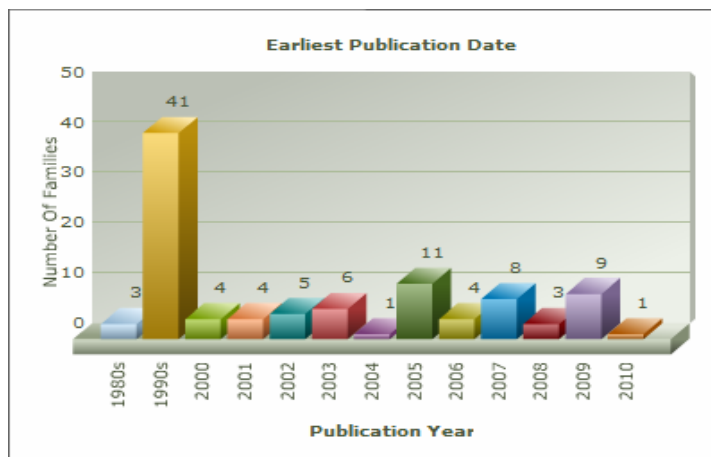
Acquisition and Sale of Assets – Process Elements

- › Scouting to Pre-evaluation
 - › Level of detail and involvement of function case dependent
 - › Selection/targeting; BD, R&D, Litigation team
 - › Fit
 - › Value
 - › Risks
 - › Commercial
 - › Technical
 - › Legal (including IP)
 - › Regulatory

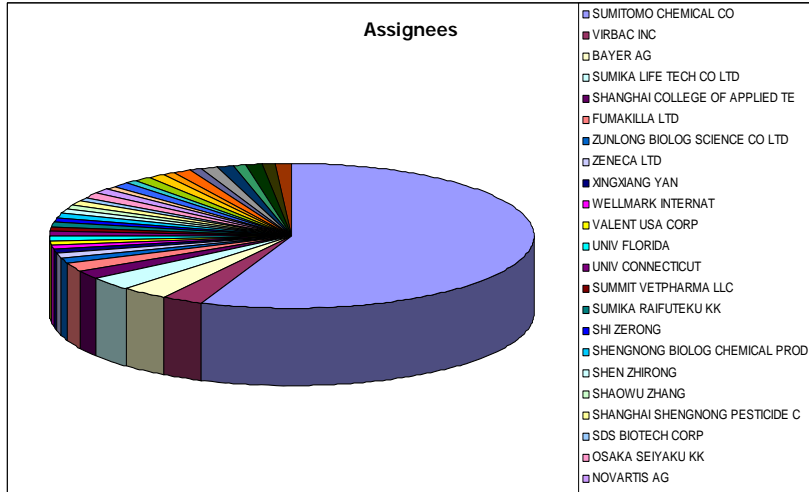


- › Intellectual Property
 - › IP landscape – Target and Competitor analysis
 - › Preliminary IP assessment

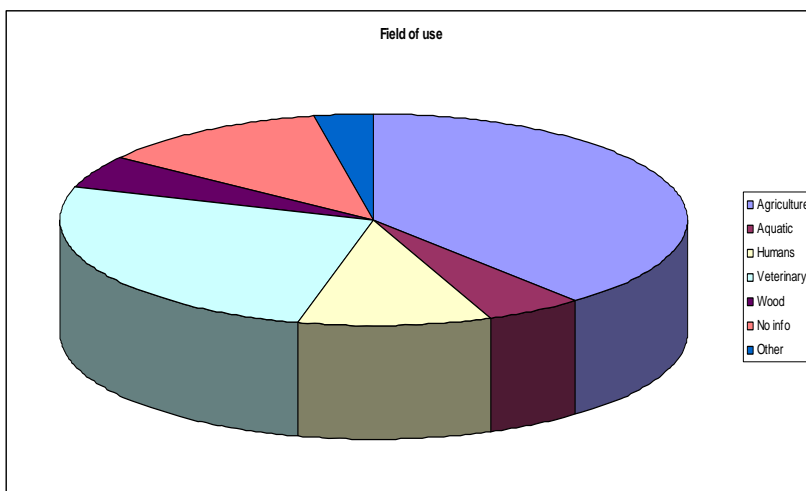
IP landscape – different maps for navigation



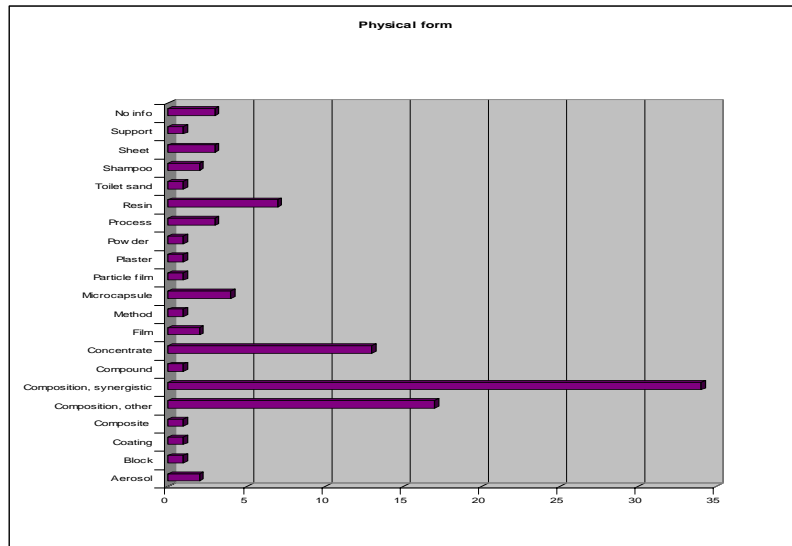
IP landscape – different maps for navigation



IP landscape – different maps for navigation



IP landscape – different maps for navigation



Preliminary IP assesment

› Patent Estate Overview

- › Number of Patents
- › Scope of patents
 - › Broad/narrow
 - › Relevant/periferal
- › Territory of patents
 - › Market fit
- › Status patents
 - › Granted/pending
 - › Conflicts
 - › Licenses
- › Ownership of patents
 - › Sole
 - › Multiple
 - › Third party



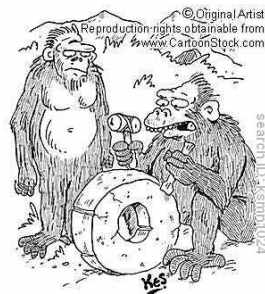
Due diligence - Confidentiality

- › Securing confidentiality
 - › An agreement which obligates a party to keep certain information confidential
 - › Several names
 - › Confidentiality Agreement (CDA)
 - › Non-disclosure Agreement (NDA)
 - › Secrecy Agreement
- › What is Confidential Information?
 - › Depends on the definition
 - › All information
 - › Information designated as confidential by the disclosing party
 - › Oral and/or written information
 - › Normal exceptions
 - › Already in public domain
 - › Already in possession by receiving party
 - › Received by third party
 - › Developed by the receiving party without use of the information from the disclosing party
 - › Materials, samples etc.
 - › Duration



Due diligence - Confidentiality

- › Parties to a confidentiality agreement
 - One-way, two-way or multiway
- › When to use?
 - Risk of disclosure of valuable secret information to other party
- › Risks when entering into CDA's
 - Project contamination, external or Internal access
 - Why not entering CDA for this event
- › Recommendations
 - Define object of confidentiality specifically and narrow
 - Where feasible keep information within designated personell group.



Due diligence – Prioritization and information retrieval

Prioritization/valuation of assets

- › ID of "need to" and "nice to" have assets from business perspective
- › Case dependency; difference between large (low IP focus) and small entities (high IP focus)
- › Never enough time!
- › Never sufficient information

Acquiring information from target - DD questionnaire

- › Technical information for each product
 - › Formula/structure/salt/isomer/sequence etc.
 - › Mode of action
 - › Formulation
 - › Manufacture
 - › Application/use
- › Patent estate information
 - › Active published, unpublished and and unfiled applications and inventions
 - › Ownership and obligations
 - › Licences and agreements
 - › Validity assessments
 - › Conflicts

Due diligence – Prioritization and information retrieval

› Acquiring information from target - DD questionnaire

- › Third party information
 - › Competitors
 - › Freedom-To-Operate
 - › Conflicts
 - › Licenses and agreements
- › Business information
 - › Territory
 - › Place of manufacture
 - › Competing products
 - › Business value
 - › Expected launch



- › Physical or virtual DD
 - › Visiting Target vs. Online DD

- › Conclusions
 - › Search
 - › Freedom-To-Operate - case dependent
 - › Target Patent Position – case dependent
 - › Risk profile, threats, opportunities, tools/recommendations to minimize IP liabilities

Negotiation, Contract and Implementation

- › Transforming (IP) risks into contract clauses
 - › Fair/balanced risk distribution between parties depending on contribution and benefit
 - › Different scenarios/upside for parties
- › Limitations
 - › Competition laws
 - › Financial authorities
 - › Other legal obligations, such as previous agreements
- › Internal Cooperation
 - › R&D/Operations/Regulatory for interpreting technical data
 - › BD for interpreting Business and Market data
 - › Legal for interpreting agreements etc.
 - › IP for interpreting patent law and regulations
- › Implementation
 - › Assimilation
 - › Integration
 - › Co-existence
 - › Contractual obligations
 - › Plan for handling of rights especially other parties rights
 - › Securing long term technical expertise for patent prosecution



Danisco's collaboration with universities, research institutions and customers

- › History, Long tradition
 - Sponsoring PhD's
 - Taking in industrial PhD's
 - Sponsoring of Professorates
 - Publically (EU/State) funded cooperations between private enterprises and public institutions
 - Contract Research (CRO)
 - Customer specific developments
- › Principles for Danisco
 - Must get retain and protect rights the Danisco invest in – not to block for any products.

Danisco's collaboration with universities and research institutions - in a global perspective



Danisco's collaboration with universities and research institutions

» Sponsorships

- University regulations and challenges
 - Ownership of IP and inventors rights
 - Invention value
 - Inventor contribution
 - Patent costs
- Publication rights and disputes
 - Internal publications/"open source research"
 - Secret and non secret parts of project
 - Time for patenting
- Foreign Universities, DE, US, CN
 - Each country – separate rules

Danisco's collaboration with universities and research institutions

› Contract Research

- Payment for research and associated know-how and rights
- Challenges with employing public vs. Private vendors

› Publically funded cooperations

- Access to base technology
- No specific core technology brought from private enterpri
- Standards or general market expansion activities



Thank you for your attention