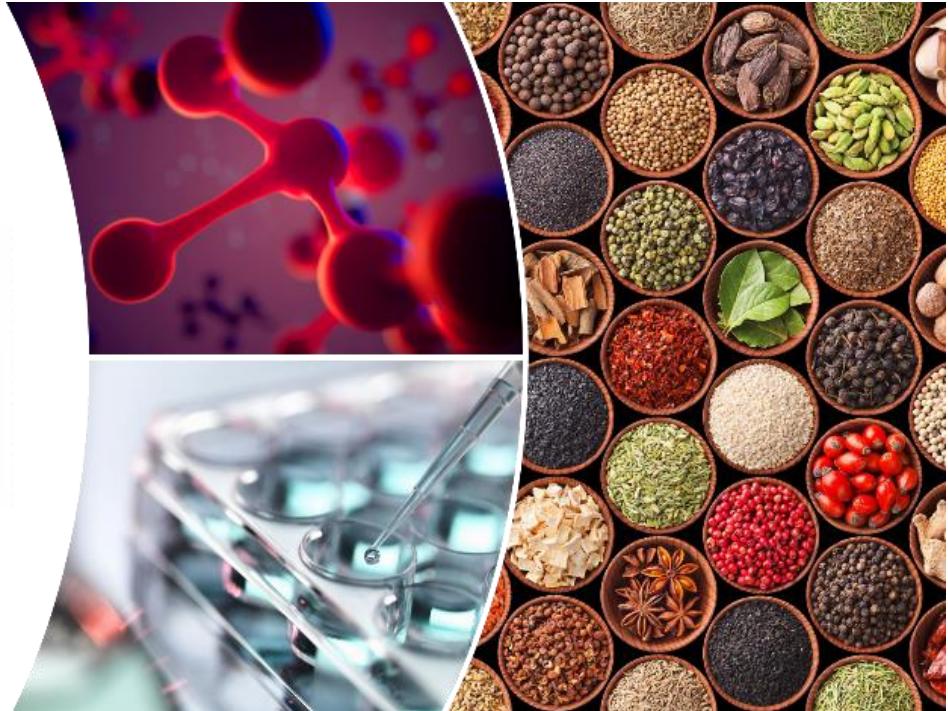




EPFL



Entrepreneurship in Food & Nutrition Science

Course 7 – Intellectual Property Rights

Intellectual Property Rights

IP relates to any original creation of the human intellect such as artistic, literary, technical, or scientific creations.

Intellectual property rights (IPR) refers to the legal rights given to the inventor or creator to protect their invention or creation for a certain period of time.

Designs

Appearance/Shape of product
(25 y)

Patents

Inventions limited exclusive rights
(~20 y)

Trade
Secret

Info keep secret (know-how,
recipes, etc.)

Trademark

Branded products distinctive sign
(indefinite)

Copyright

Literary, dramatic, artistic works
(Life plus 70 y)

Technical IP



What is a technical invention?

An invention is a technical solution to technical problem

Example:

Enhance sweetness perception
without increasing sugar content

Technical problem

Specific lactic acid bacteria identified
to increase sweetness perception

Technical solution

= Invention that may be patented

- Patent law generally defines what is **not** an invention and this list may **differ across jurisdictions**.
- For example, in Europe, the following is not considered as an invention:

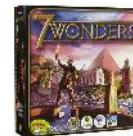
DISCOVERIES,
SCIENTIFIC THEORIES
AND MATHEMATICAL
METHODS
(e.g. discovery of a
planet)



AESTHETIC
CREATIONS
(e.g. original shape
for a bottle),



PLAYING GAMES,
MENTAL/BUSINESS
METHODS, AND PROGRAMS
FOR COMPUTERS
(e.g. board game)



PRESENTATION OF
INFORMATION
(e.g. computer
interface)



INVENTIONS
CONTRARY TO
“ORDRE
PUBLIC”/MORALITY
(e.g. drug)



PLANT OR
ANIMAL
VARIETIES
(e.g. new breed)

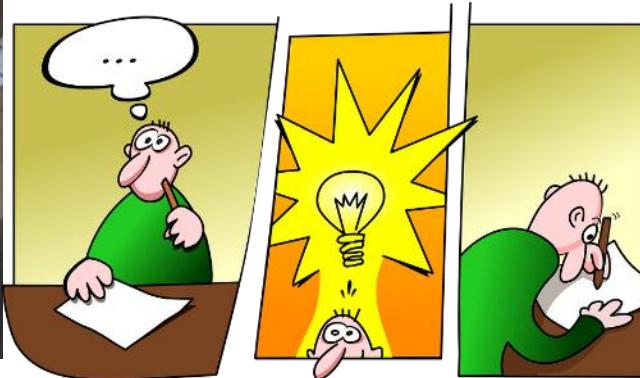


THERAPEUTIC, SURGERY
OR DIAGNOSTIC
METHODS ON
HUMAN/ANIMAL BODY
(e.g. method for
providing chemotherapy
to a patient).



What is an invention?

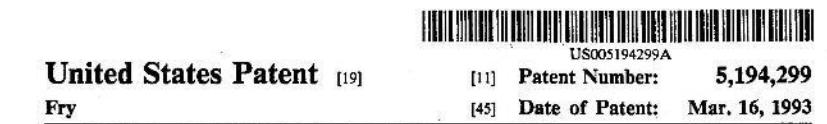
Starting from a technical challenge, an invention uses technology to provide a technical solution !



All essential features of the invention must be described (how it works)

What is an invention?

Doesn't have to be 'targeted', can be accidental...



[54] REPOSITIONABLE PRESSURE-SENSITIVE ADHESIVE SHEET MATERIAL

[75] Inventor: Arthur L. Fry, Saint Paul, Minn.

[73] Assignee: Minnesota Mining and Manufacturing Company, St. Paul, Minn.

[21] Appl. No.: 948,095

[22] Filed: Dec. 31, 1986

Related U.S. Application Data

[60] Division of Ser. No. 662,605, Oct. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 662,605, Oct. 19, 1984, abandoned.

[51] Int. Cl. 3 B32B 31/00

[52] U.S. Cl. 427/208.6; 427/421; 427/284; 427/285; 428/194; 428/198; 428/201; 428/202; 428/211; 428/343

[58] Field of Search 428/194, 198, 211, 343, 428/40, 202, 201; 427/208.6, 421, 284, 285

[56] References Cited U.S. PATENT DOCUMENTS

1,944,834 1/1934 Bennett, Jr. 154/43
2,000,475 5/1935 O'Donnell 154/43
2,116,289 5/1938 Shepherd 91/50
2,264,629 12/1941 Engert et al. 40/2
2,349,709 5/1944 Evans 117/44
2,386,731 10/1945 Wenzelberger 91/50
2,515,473 7/1950 Ptasnik 117/44
2,721,810 10/1955 Schram 117/45

2,729,193 1/1956 Scholl 118/202
2,750,942 6/1956 Robson 128/156
2,940,868 6/1960 Patchell 117/38
3,033,702 5/1962 Fenselau 117/38
3,174,888 3/1965 Morgan 156/230
3,671,284 6/1972 Ulrich 117/21
3,691,140 9/1972 Silver 160/78.5
3,741,786 6/1973 Torrey 117/3.1
3,808,084 4/1974 Knechiges et al. 161/148
3,811,432 5/1974 Economou 128/156
3,857,731 12/1974 Merrill, Jr. et al. 117/122
3,900,642 8/1975 Michel 428/40
3,967,624 7/1976 Milnamov 128/287
4,004,049 1/1977 Horwat et al. 427/208.6
4,063,559 12/1977 Tritsch 128/287
4,166,152 8/1979 Baker et al. 428/522
4,460,634 7/1984 Hasegawa 428/124

FOREIGN PATENT DOCUMENTS

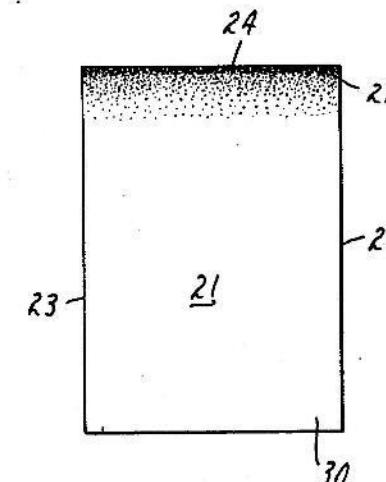
1541311 2/1979 United Kingdom

Primary Examiner—Alexander S. Thomas
Attorney, Agent, or Firm—Gary L. Griswold; Walter N. Kirn; Thomas J. Odar

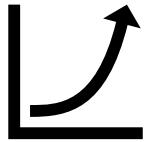
[57] ABSTRACT

Pressure-sensitive adhesive sheet material having the ability to be applied to paper and removed therefrom without lifting fibers or delaminating the paper. The otherwise conventional pressure-sensitive adhesive is applied to the backing by spraying, resulting in a non-repetitive pattern of adhesive islands.

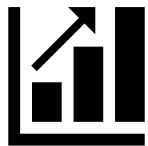
5 Claims, 1 Drawing Sheet



Trade Secrets



Commercially valuable information
because secret



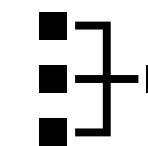
Creates a **competitive advantage**



Subject to **Secrecy Provisions**



Not readily known, identifiable or
ascertainable



Can be positive or negative, i.e. what does
not work, as well as what does, and not
limited to recipes, processes, engineering
solutions etc., e.g. customer list



What is a patent ?

Provides protection for product, process, apparatus, e.g.

- an application of a new discovery
- an improvement to an existing product/process

It is a negative right:

- It confers the right to stop someone from doing something (making, selling, using, keeping, importing, exporting) – but only once granted!

Owning a patent on an invention does not give you the right to work that invention – doing so may infringe someone else's patent or other rights

What is a patent ?

Must go through an application process first to establish whether requirements are met for a patent to be granted

During the application process, patent examiners will search for relevant documents and analyse the patent application to check it conforms with the requirements for patentability (novelty, inventive step, sufficiency/enablement etc.)

Often, the patent application will be amended during this process, e.g. the scope of the claims will be narrowed

Once granted, it is possible to attack the validity of the patent

What is a patent ?

It is a national right, so gives protection in one country only

There are no international patents, only international patent applications

It is a piece of 'property', so an asset to the company

Can license patented technology for payment, or in return for other licenses ("cross-licensing")

Can assign rights in return for payment

What is a patent ?

A patent is a right to:

- **Exclude** unauthorized third parties from manufacturing, advertising and/or selling the **claimed** invention
- In a **country** where the patent is **granted**
- For max. **20 years**

It is not a Monopoly

It is not a “Right To Commercialize”

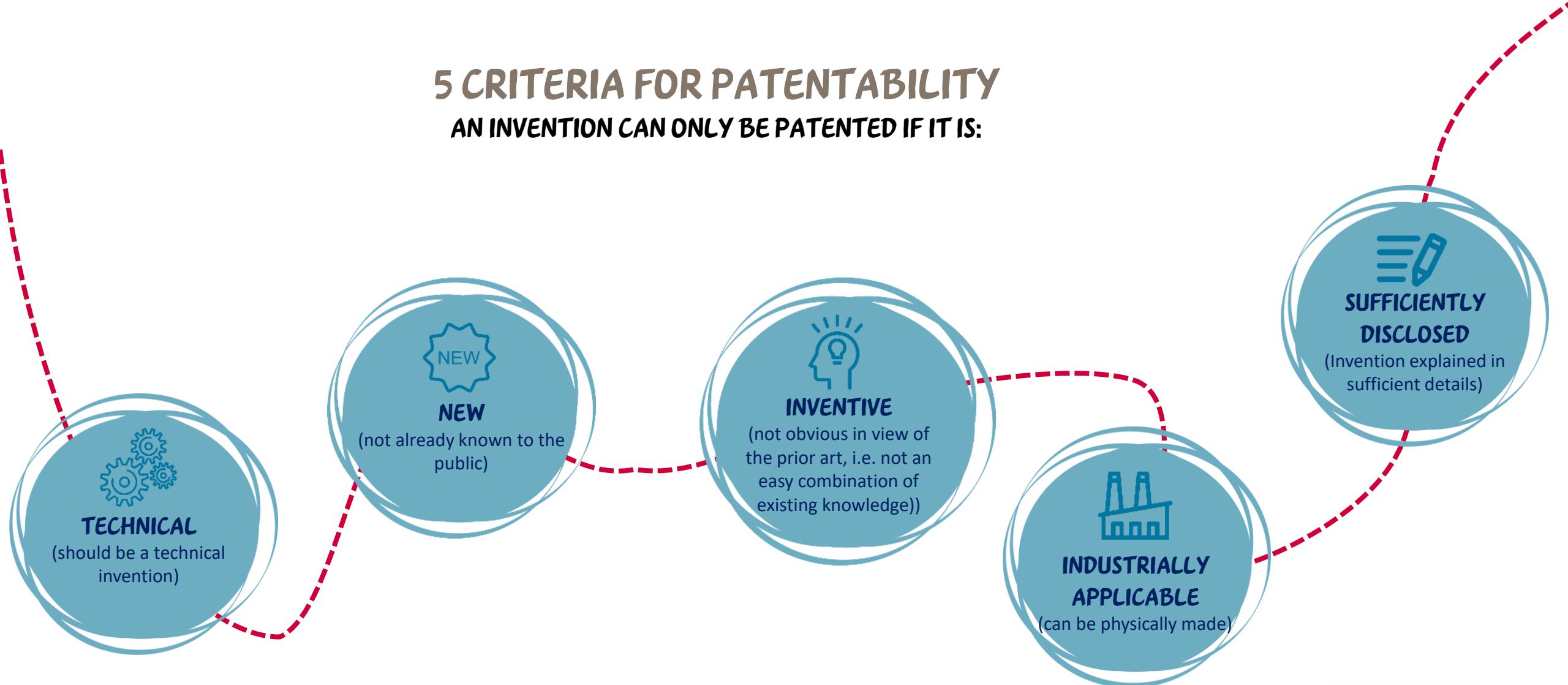


EPFL

What are the criteria for patentability ?

5 CRITERIA FOR PATENTABILITY

AN INVENTION CAN ONLY BE PATENTED IF IT IS:



What is new (novelty)?

"NEW" MEANS : UNAVAILABLE TO THE PUBLIC

- Anywhere,
- in any form (written, oral, physical, etc...),
- before the day the patent application is filed.



**NOVELTY CAN ONLY BE PRESERVED IF SECRECY IS MAINTAINED
BEFORE FILING OF A PATENT APPLICATION**

Patent lifecycle

Months from
priority date:

0 12 16 18 22 28 30

Application
filed with
patent Office
(priority date)

International phase

Publication
of international
application
ISR and written
opinion

National phase

PCT national
phase entry
(where the applicant
seeks protection)

Application
secret

Available to
the public

Grant

Prosecution

3-6 Years
from filing

EPFL

Advantages and disadvantages of getting a patent

Advantages

- Exclusivity enables investment and higher returns on investment
- Strong, enforceable legal right
- Makes invention tradable (licence, sale)

Disadvantages

- Reveals invention to competitors (after 18 months)
- **Can be expensive**
- Grant may take 3-5 years
- Patent enforceable only after grant; proceedings can be costly

Technical IP Summary

	Patents	Trade Secrets
Publicly disclosed vs confidential	Patents publish	Kept confidential, <u>select people</u> and bound by legal contract
Formal application vs private protection	Require a formal application	Onus of protecting trade secrets lies entirely with owner
Requirements	Novel and inventive	Not easily reverse engineered and controlled access
Rights Exclusion vs misappropriation	Exclude everyone else from using the invention, stop infringement practices via legal action	Protection from being misappropriated and once public, limited defences – cannot prevent independent work
Duration	20 years	May be safeguarded in perpetuity
Risks	May not grant	May be patented by a third party and limited protection when public

Safeguarding Your Invention

Don'ts

Don't publish any articles, press releases, conference presentations/ posters/ proceedings, lectures or blog posts, etc. before you file

Don't sell any products incorporating the invention before you file

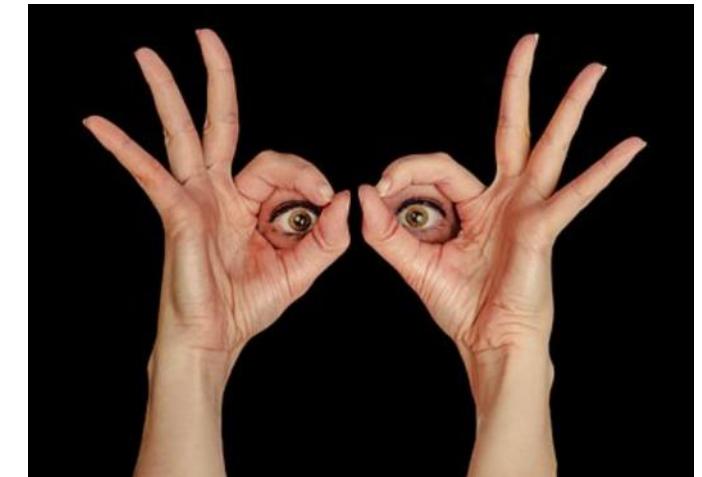
Don't do consumer testing on prototype without an CDA

Do's

Do consider doing a **prior art search** early – beginning not end!

Do consider a confidential disclosure agreement (CDA)

File your patent application before anyone else does!



CONSULT WITH A PATENT COUNSEL
at an early stage

How Can A Patent Be Used

Competitive defence

- Presence of IP may provide a bar to competitors launching product
- Could provide a bar to infringement action because of possible counter-attack using the IP

Offensive strategy

- Aggressive use of IP
- Enforcement of IP rights against competitors
- Can be very expensive!

Licensing model

- Retain some or all of the IP rights
- Generate a revenue stream

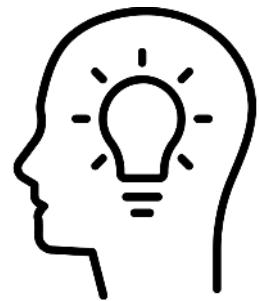
Generate interest from investors



Two different words, two different questions, two different finalities

PATENTABILITY

Does the technology of interest fulfill patentability requirements, e.g. novelty, inventive step etc ?



CREATION OF ASSET



FREEDOM TO OPERATE

Is the technology of interest within the scope of, i.e. infringing a third party patent ?



RISK MITIGATION

What is Patent Infringement?

Infringement of a patent is any **unauthorised commercial activity**:

- advertising
- making
- using
- selling
- storing (stock-piling)
- importing

of a **product, device, process** as defined in the **claims** of a **granted patent** in force, in a given country.



National Courts decide if patent is infringed and infringer must:

- **stop** infringement (advertising, making, selling, etc.)
- **pay** damages
- **pay** for legal expenses

A brief note on publication numbers

Generally have form of 2 letter country code (EP, JP, GB, US etc.) followed by number
Applications publish at ~18 months from filing

Publication numbers contain hidden information about a patent's status:

GB and EP applications

- GB 1,234,567A1 or EP 1,234,567A1 : Pending application
- GB 1,234,567B1 or EP 1,234,567B1 : Granted patent
- A1 = publication with search report
- A2 = publication without search report
- A3 = publication of bibliographic information with search report

US applications

- 14/448,583: Application number
- US 2008/1234567 : Published pending application (first four digits = year published)
- US 7,654,321 : Granted patent

How to search for patents

Useful to:

- Find existing solutions to technical problems
- Track progress of emerging technologies
- See what competition is developing



Espacenet

- Free access to 140 million patent documents worldwide since 1782
- Machine-translated patent documents
- User friendly interface:
 - Keyword in title, abstract or claims
 - Application number
 - Applicants or inventors



- Free access to 86 millions patent document from 22 Countries and since 2006
- Search by key words in title, abstract, claims

How to search for patents - ESPACENET

Allows for searching by title, title or abstract, publication number, application number, priority number, publication date, applicant, inventor and classification

Will search across range of different countries and regions, including UK, US, international (PCT), Europe (EP), Chinese, Japanese, Korean etc.

Provides text of description and claims with machine translation features for more recent patents

Downloadable pdf versions of published patents and applications are available
"INPADOC" patent family tab provides details of all related applications with links

WO2012102769 (A1)

[Bibliographic data](#)

[Description](#)

[Claims](#)

[Mosaics](#)

[Original document](#)

[Cited documents](#)

[Citing documents](#)

[INPADOC legal status](#)

INPADOC patent family

Quick help

→ Can I export this list?
→ What happens if I click on "Download covers"?
→ Can I sort the list?
→ What happens if I click on the

Family list: WO2012102769 (A1) — 2012-08-02

Select all (0/17) Compact Export (CSV | XLS) Download covers CCD Print

17 application(s) for: WO2012102769 (A1)

Sort by: Priority date Sort order: Descending Sort show citations

1. STEVIA BLENDS CONTAINING REBAUDIOSIDE [No Title]

★ Inventor: BRIDGES JOHN R Applicant: TATE & LYLE INGREDIENTS [US] CPC: A23L1/2363 IPC: A23L19/00 Publication info: WO2012102769 (A1) Priority date: 2011-01-28
[US] CARLSON (+2) A23L2/60 A23L2/60 2012-08-02
ALFRED [US] (+1) A23L27/36 A23L27/00 (+5) (+2) 

2. STEVIA BLENDS CONTAINING REBAUDIOSIDE B



Espacenet
Patent search

<https://worldwide.espacenet.com>

EPFL

How to search for patents - ESPACENET

 **Espacenet**
Patent search

aerated chocolate X Search

My Espacenet **Help** **Classification search** **Results** Advanced search Filters Popup tips

Home > Results

Query language: en de fr ▾

AND + Field

All text fields or names = Group

aerated

All text fields or names = Group

chocolate

Search **Reset**

<https://www.espacenet.com>

3 373 results found

List view List content Sort by

Text only All Relevance

(0 patents selected) **Select the first 20 results**

1. **AERATED CHOCO-MATERIAL**
CA3023931A1 • 2018-03-08 • NESTEC SA [CH]
Earliest priority: 2016-08-30 • Earliest publication: 2018...
...There is described a micro aerated choco-material having a plastic viscosity before aeration as measured according to ICA method... of from 0.5 to 1.2 m² per 100g of the aerated choco-

2. **AERATED CHOCOLATE, BAKED AERATED CH...**
JP2010207196A (B2) • 2010-09-24 • MORINAGA & CO
Earliest priority: 2009-03-12 • Earliest publication: 2010...
...PROBLEM TO BE SOLVED: To provide aerated chocolate and baked aerated chocolate each having smooth meltability in the mouth... chocolate and the baked aerated chocolate. P

Text fields

- Title
- Abstract
- Description
- Claims
- Title or abstract
- Title, abstract or claims

Names

Inventors

Applicants

Inventors or applicants

EPFL

How to search for patents – EPO Website

Provides details of applicant, filing and priority dates, inventors, representatives, status of European patents/applications

“All documents” tab provides details of prosecution history (communications issued by EPO, responses from applicant, fees paid etc.)

Also links directly to Espacenet

EP0987259

European procedure
About this file
Legal status
Federated register
Event history
Citations
Patent family
All documents

Quick help

- Is it possible to download documents?
- Is it possible to print a list of all the documents?
- Can I sort the list of documents?
- Is it possible to open one of the documents?
- Can I open multiple documents in separate windows?
- Is it possible to print a document?

All documents: EP0987259

Refine search Selected documents Zip Archive Espacenet Submit observations Report error Print

All documents(36) Search

<input type="checkbox"/> Date	Document type	Procedure	Number of pages
<input type="checkbox"/> 24.04.2003	Communication regarding the expiry of opposition period	Search / examination	1
<input type="checkbox"/> 10.05.2002	Decision to grant a European patent	Search / examination	2
<input type="checkbox"/> 06.12.2001	Filing of the translations of the claims	Search / examination	1
<input type="checkbox"/> 06.12.2001	Translation of the claims	Search / examination	2
<input type="checkbox"/> 06.12.2001	Translation of the claims	Search / examination	2
<input type="checkbox"/> 01.10.2001	Invitation to pay the fees for intended grant	Search / examination	4
<input type="checkbox"/> 27.09.2001	Approval to announcement of intention to grant a European patent	Search / examination	1



<https://register.epo.org/>

EPFL

How to read patents...

Title – usually quite uninformative!

Abstract

Description – may contain:

- Discussion of the field of invention, including any existing technology
- Examples
- Technical information on how to work invention
- Data showing effect of invention (e.g. compared to what is already known in the field)
- Discussion of any figures
- Preferred embodiments

Figures

Claims

How to read patents...

As a technical document:

- Usually done when assessing whether or not a patent discloses your invention (i.e. when assessing novelty and/or inventive step), or when seeking information (e.g. about a competitor's process of making a certain product)
- The claims may be misleading
- Focus primarily on the description of the drawings and any examples and consider all different variations
- If your independent claim defines a set of features which are not present in the prior art, it is new

How to read patents...

As a legal document:

- Usually done in freedom-to-operate (FTO) situations where it is important to know whether or not your proposed activities will infringe the rights of someone else
- Focus on claims – these define the scope of protection – but will need to know what the words/phrases in the claim mean to determine this!
- Work out which are the independent claims - You need all of the features of any independent claim to infringe
- Individual words, letters, and punctuation all matter – it is a precise, forensic analysis
- Don't expect to "read" a claim – it should be analysed; this can take a long time
- The description and drawings can be used to help to interpret claims

How to read patents...

The scope of protection of a patent is defined in the claims (found at the end of the document)

- Scope defined by independent claim/claims with all essential features (sets out broadest scope of protection) e.g. “A product comprising X Y Z”
- Two types of independent claim – product or process
- Set of dependent claims
 - Reference to the other claim(s) e.g. *“The product according to claim 1, wherein...”*
 - Defining additional features (i.e. defining a narrower scope of protection within that set out in the independent claim)
 - So-called fallback positions
 - Grouped together where possible

How to read patents...

Basic claim: "*A furniture having at least three legs.*"

- Claim covers all the chairs, tables and every furniture that has at least three legs.
- Granted patent would be a highly valuable patent right, since the scope of the protection is very broad.

Alternate claim: "*A chair having four legs and two armrests.*"

- Only covers chairs having exactly four legs and two armrests (does not cover tables, chairs with three legs or chairs with four legs but no armrests).
- Anyone could manufacture and sell chairs with four legs as long as said chairs do not have armrests. Only have right over chairs having four legs and two armrests.

Can see how important each word in a claim is, and how easy it is to make a mistake and file a claim that is too narrow.

Two Key Rules

The application must disclose the invention

Because of the next point, it is almost impossible to overcome an objection stating that your application does not disclose the invention sufficiently.

You cannot add subject matter after filing:

- You filed a patent application disclosing a chair with four legs, but after you receive the search report, you realize that your invention is not new, other chairs with four legs already exist. You quickly figure out a way to make your invention new: by adding two armrests. Although the invention with the addition of the armrests might be new, this amendment is not allowed.
- Another example could be changing a range from 10-100°C to 30-60°C, after realising that 10-100°C is too broad and not novel. However, this amendment is also not allowed, if the range 30-60°C was not mentioned in your application as originally filed.

How to read patents...

Examples

A utensil comprising a shallow bowl and a handle extending outwardly from an edge of said bowl.

A utensil comprising a bowl and a handle extending upwardly from an edge of said bowl

How to read patents...

Examples

A writing instrument comprising:

an elongate body having first and second ends and a hollow core; and
an abradable material for marking a surface located within the core and
configured such that at least a portion of the abradable material protrudes from at least
one of the first and second ends of the body.

A sheet metal binder clip having

extremities maintained in juxtaposition by the resiliency of the metal,
handle receiving and operating jaws formed at said extremities and
comprising separated, oppositely disposed duplex cam surfaces and
handles having opposite ends journaled in said jaws and operating against said
cam surfaces.

How to read patents...

Summary 1/2

- Claims define scope of protection – most important for FTO and what you want to protect
- Examples can be used to see what product the patent seeks to protect
- Description useful for understanding background to invention

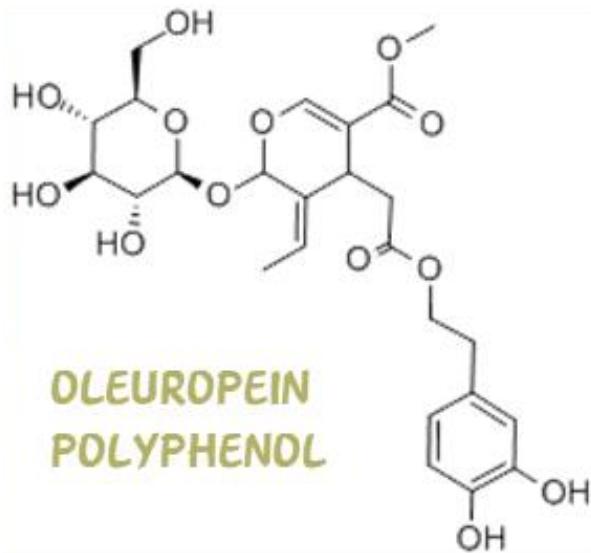
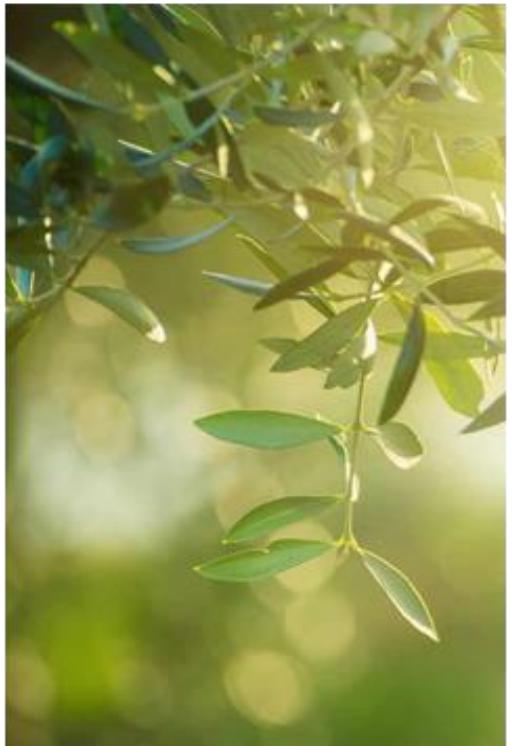
Summary 2/2

- Consider best form of **IP Rights** to protect your invention (define **IP Strategy**)
- Don't disclose your invention **too early**
- Consider **patentability** and **FTO** (searches)
- Strategy for **blockers** (prior art/competitor patents)

Thank you!

Any Questions?

Example of Oleuropein for muscle energy



PATENT PROTECTION

Patent on Oleuropein for energy and fatigue

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau

(43) International Publication Date 19 November 2020 (19.11.2020)

WIPO | PCT

(10) International Publication Number **WO 2020/229538 A1**

(51) International Patent Classification:
*A61K 31/048 (2006.01) A61P 25/22 (2006.01)
A61K 33/06 (2006.01) A61P 25/28 (2006.01)
A61P 3/04 (2006.01) A61P 27/02 (2006.01)
A61P 3/06 (2006.01) A61P 27/16 (2006.01)
A61P 3/10 (2006.01) A61P 31/00 (2006.01)
A61P 9/00 (2006.01) A61P 35/00 (2006.01)
A61P 13/12 (2006.01) A61P 39/00 (2006.01)
A61P 25/00 (2006.01) A61P 43/00 (2006.01)*

(21) International Application Number: PCT/EP2020/063329

(22) International Filing Date: 13 May 2020 (13.05.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 62/847,076 13 May 2019 (13.05.2019) US

(71) Applicant: SOCIETE DES PRODUITS NESTLE S.A. [CH/CH]; Avenue Nestlé 55, 1800 VEVEY (CH).

(72) Inventors: DE MARCHI, Umberto; Avenue des Etangs 77, 1219 Le Lignon (CH); HORCAJADA, Marie Noëlle; 199 route de la ferme, 66170 Esquerdes (FR); FEIGE, Jerome; 1 rue des Alpes 21, 1023 CRESSIER (CH); MAM-MUCARI, Cristina; Università degli Studi di Padova Via VIII Febbraio 2, 35122 Padova (IT); BLAAUW, Bert; Università degli Studi di Padova Via VIII Febbraio 2, 35122 Padova (IT).

(74) Agent: CHAUTARD, Cécile; Société des Produits Nestlé S.A., Avenue Nestlé 55, 1800 VEVEY (CH).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TI, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

(54) Title: COMPOSITIONS AND METHODS TO TREAT OR PREVENT METABOLIC FATIGUE USING AT THE COMPOUND OLEUROPEIN OR A METABOLITE THEREOF

(57) Abstract: At least one of oleuropein or metabolite thereof can be orally administered to an individual in an amount effective to achieve at least one result that is one or more of (i) improvement in a physiological state linked to metabolic fatigue in one or more cells, (ii) increased mitochondrial energy and mitochondrial calcium uptake in one or more cells, and/or (iii) treatment or prevention of a calcium deficiency / depletion disorder. Additionally or alternatively, the method can treat or prevent a mitochondria-related disease or a condition associated with altered mitochondrial function in an individual in need thereof or at risk thereof.

WO 2020/229538

PCT/EP2020/063329

TITLE

COMPOSITIONS AND METHODS TO TREAT OR PREVENT METABOLIC FATIGUE USING AT THE COMPOUND OLEUROPEIN OR A METABOLITE THEREOF

BACKGROUND

[0001] The present disclosure generally relates to compositions and methods that use at least one of oleuropein or metabolite thereof to manage energy at a cellular level. The compositions and methods can boost mitochondrial function and increase bioenergetics through activation of the mitochondrial calcium uniporter to thereby promote cellular activation.

[0002] Sarcopenia is defined as the age-associated loss of muscle mass and functionality (including muscle strength and gait speed). Muscle functionality and physical ability decline with the loss of muscle mass. Impaired muscle functionality is highly predictive of the incidence of immobility, disability, and mortality in advanced age. With the rising elderly population, sarcopenia becomes increasingly prevalent such that 45% of the elderly U.S. population has moderate-to-severe symptoms. The U.S. health care direct and indirect costs attributable to sarcopenia reach nearly \$19 billion. Therefore, prevention and/or treatment of sarcopenia would have a great impact on the health and quality of life of our society and consequently on the economy associated with health care. Unfortunately, the etiology and the physiopathological mechanism of sarcopenia are still poorly understood, making effective measures for prevention or treatment difficult.

SUMMARY

[0003] Mitochondria are the primary source of aerobic energy production in mammalian cells and also maintain a large Ca^{2+} gradient across their inner membrane, providing a signaling potential for this molecule. Furthermore, mitochondrial Ca^{2+} plays a role in the mitochondria in the regulation of ATP generation and potentially contributes to the orchestration of cellular metabolic homeostasis. (Glancy, B. and R. S. Balaban (2012). "Role of mitochondrial Ca^{2+} in the regulation of cellular energetics." *Biochemistry* 51(14): 2959-2973).

<https://patents.google.com/patent/WO2020229538A1>

© 2025, Société des Produits Nestlé SA.

EPFL

+ 30 -100 pages of text description of the invention and field

Claims and figures are at the end of the patent

WO 2020/229538

24

PCT/EP2020/063329

CLAIMS

The invention is claimed as follows:

1. A method of achieving at least one result selected from the group consisting of (i) improvement in a physiological state linked to metabolic fatigue in one or more cells, (ii) increased mitochondrial energy and mitochondrial calcium uptake in one or more cells, and (iii) treatment or prevention of a calcium deficiency / depletion disorder, the method comprising orally administering an effective amount of at least one of oleuropein or metabolite thereof to an individual.

2. The method of Claim 1, wherein at least a portion of the one or more cells are part of at least one body part selected from the group consisting of a liver, a kidney, a brain, and a skeletal muscle.

3. The method of Claim 1 or 2, wherein the physiological state linked to metabolic fatigue comprises muscle fatigue or weakness, lack of energy, physical energy, lack of vitality or weakness.

4. The method of any of Claim 1 to 3, wherein the effective amount of at least one of oleuropein or metabolite thereof is orally administered daily for at least one week.

5. The method of any of Claim 1 to 4, wherein the metabolite of oleuropein is selected from the group consisting of oleuropein aglycone, hydroxytyrosol, homovanillyl alcohol, isohomovanillyl alcohol, glucuronidated forms thereof, sulfated forms thereof, derivatives thereof, and mixtures thereof.

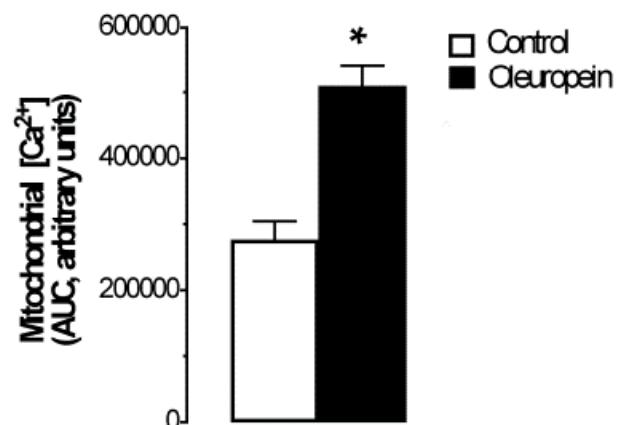
6. The method of any of Claim 1 to 5, wherein the effective amount of at least one of oleuropein or metabolite thereof is administered in a composition selected from the group consisting of food compositions, dietary supplements, nutritional compositions, nutraceuticals, beverages, powdered nutritional products to be reconstituted in water or milk before consumption, food additives, medicaments, drinks, petfood, and combinations thereof.

WO 2020/229538

4/16

PCT/EP2020/063329

FIG. 4

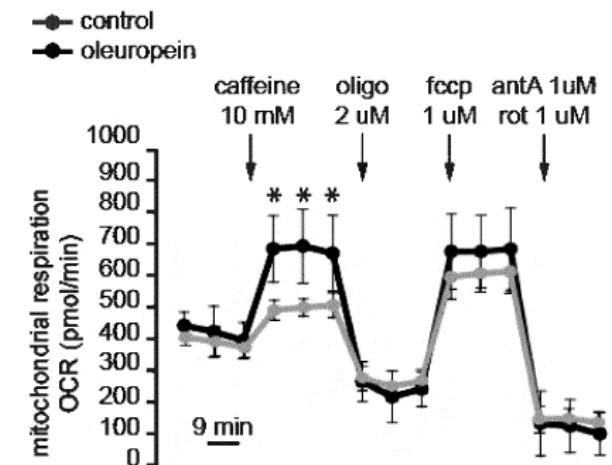


WO 2020/229538

13/16

PCT/EP2020/063329

FIG. 13



Examples – how to protect (1/2)

INNOVATION	STANDARD CONFIDENTIALITY PROCEDURES – KEEP IN HOUSE	FILE PATENT	HIGHLY CONFIDENTIAL- RESTRICTED TEAM WITHIN COMPANY
Combination of three ingredients that must be declared on pack but enable a surprising reduction in sugar without loss of organoleptic properties.		✓	
Choice of a commercially known flavouring out of 15 possible commercially available options that enables a cost saving.	✓		
Specific processing times, temperatures and concentrations for a commercially available enzyme that enables a significant cost saving but is not detectable in final product. R&D project was long and expensive.			✓
An A.I. toolkit that enables us to screen thousands of ingredient combinations to provide the desired nutritional and cost-saving combinations.			✓
A nozzle for depositing a food product where the nozzle enables a significant reduction in wasted material. We designed the nozzle internally and know that it is not commercially available but it can easily be manufactured using 3-D printing.	✓	✓	✓

Examples – how to protect (2/2)

INNOVATION	STANDARD CONFIDENTIALITY PROCEDURES – KEEP IN HOUSE	FILE PATENT	HIGHLY CONFIDENTIAL- RESTRICTED TEAM WITHIN COMPANY
Results of research project showing what products cannot be packaged in a range of commercially known paper packaging solutions.	✓		✓
Results of a significant consumer research study highlighting potential key future trends in that category.	✓		✓
A process that could be reverse engineered but is almost certainly the only way to prepare a particular product on an industrial scale.		✓	
A sustainable packaging material that we have prepared on a very small scale and shown to have very good barrier properties but we need third party assistance to test on a commercial scale.		✓	
A process for converting raw materials into known ingredients which enables a very significant cost saving against buying the ingredient from a supplier.			✓