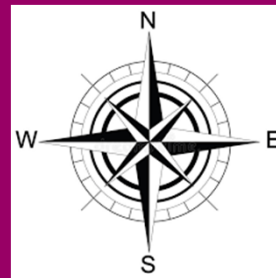




**Karolinska
Institutet**

Med patent som kompass

– Lärdomar från Karolinska Institutets innovationslandskap



Charlotta Dahlborg & Danielle Lewensohn

Enheten för Bioentreprenörskap (UBE)

Institutionen för Lärande, Informatik, Management och Etik (LIME)

ESTRAD-föreläsning, ESBRI - Institutet för entreprenörskaps- och småföretagsforskning

18 oktober 2017

Vilka är vi?

Charlotta Dahlborg Ph.D.

- Researcher in innovation management at KI
- Co-managing the **KIIP-database**
- Founder of **Ibisco** (Innovation management and market analysis consulting)
- Programme manager of Nordic Mentor Network for Entrepreneurship (NOME) at Karolinska Institutet Innovations AB

Danielle Lewensohn civ.ing., Ph.D.

- Researcher in innovation management at KI
- Co-managing the the **KIIP-database**
- Founder of **Dalea** (Intellectual Property-management consulting)
- International work experience in life science, medtech and legal (patent, trademarks etc.) services
- TTO work experience

Anslagsgivare

- The Foundation for Promotion and Development of Research at KI (2016)
- Romanusfonden (2014)
- Sverige-Amerika stiftelsen (2011/2012)
- VALGEN (Value Addition Through Genomics and GE3LS) (2011-2012)
- Vinnova (2010)
- Hans Werthén fonden (2010)
- Sparbankernas Forskningsstiftelse (2004)



Charlotta Dahlborg, Danielle Lewensohn, Unit for Bioentrepreneurship, (charlotta.dahlborg@ki.se, danielle.lewensohn@ki.se)

Dagens resplan: kl. 15.00-16.15

BLOCK 1: Vilken är universitetets roll?

BLOCK 2: Hur navigerar vi med patent som kompass?

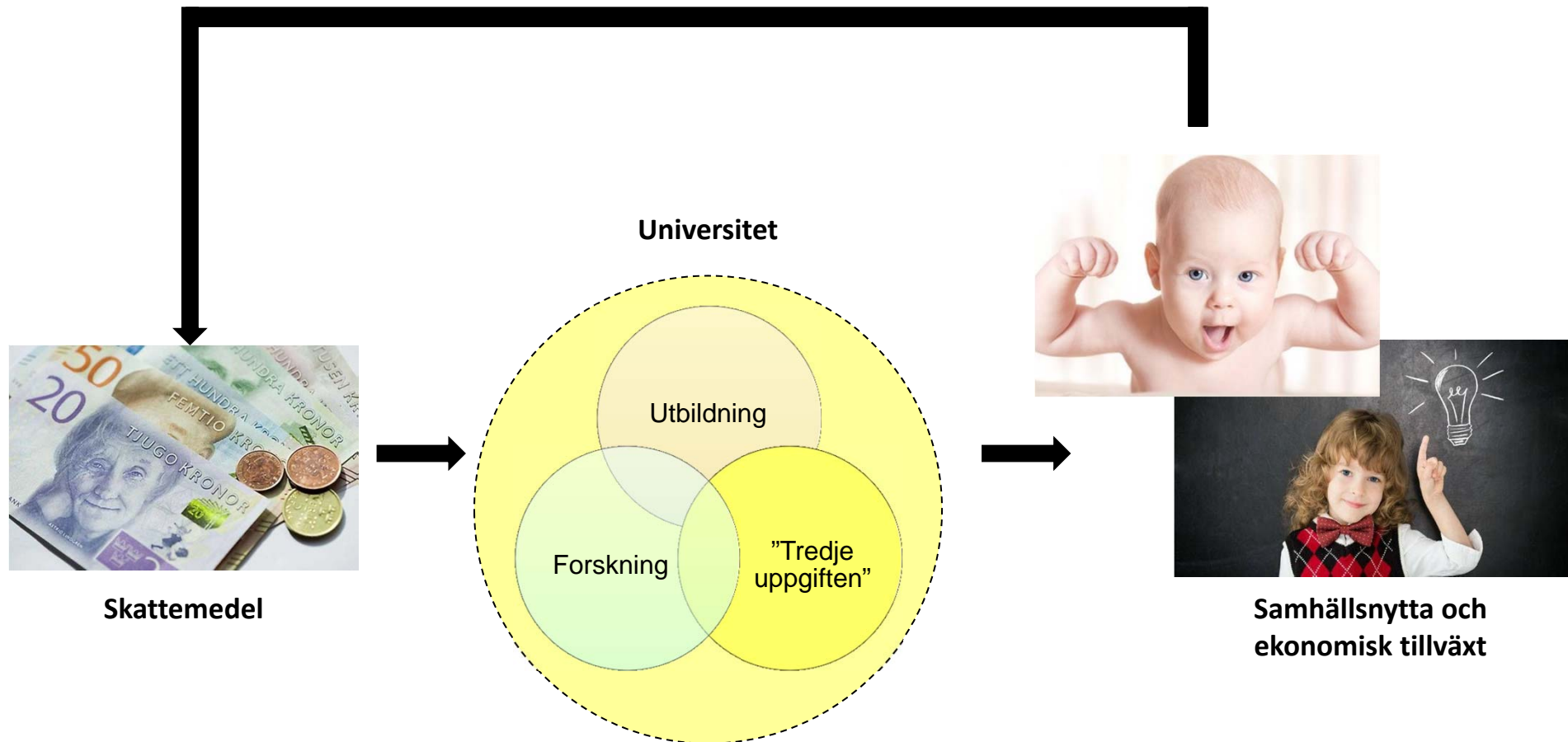
BLOCK 3: Vad döljer sig i innovationslandskapet?

BLOCK 4: Nästa resmål?



BLOCK 1: Vilken är universitetets roll?

Universitetets roll i samhället



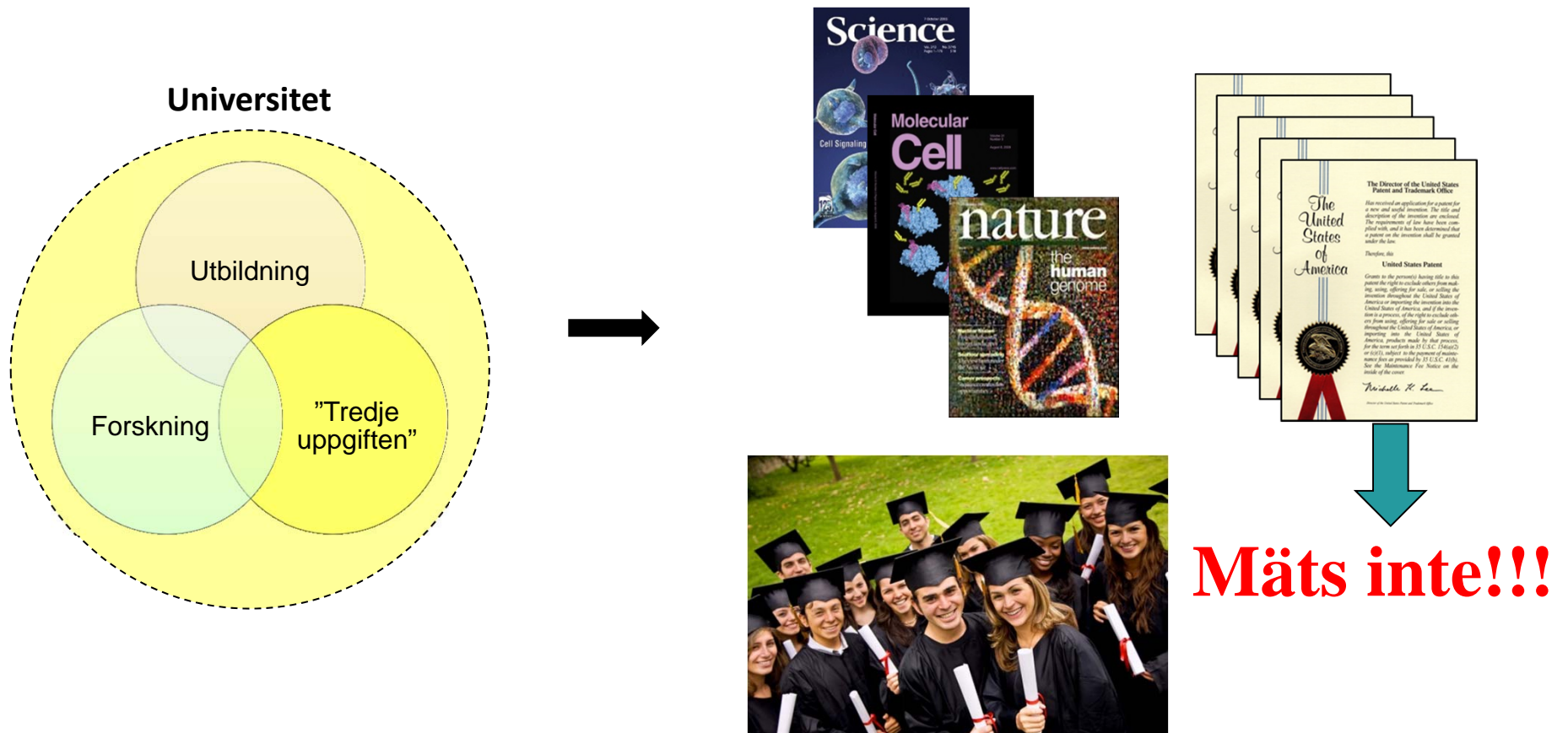
Samverkan: ”den tredje uppgiften”



Högskolelagens första kapitel, andra paragrafen:

"I högskolornas uppgift ska ingå att samverka med det omgivande samhället och informera om sin verksamhet samt verka för att forskningsresultat tillkomna vid högskolan kommer till nytta".

Utvärdering av universitetets aktiviteter



Rankningslistor

Internationell innovation



Akademisk Forskning/Utbildning



Akademisk innovation



Most innovative universities (2015)

source <http://stateofinnovation.thomsonreuters.com/the-worlds-most-innovative-universities>



Varför saknas Sverige i statistiken?

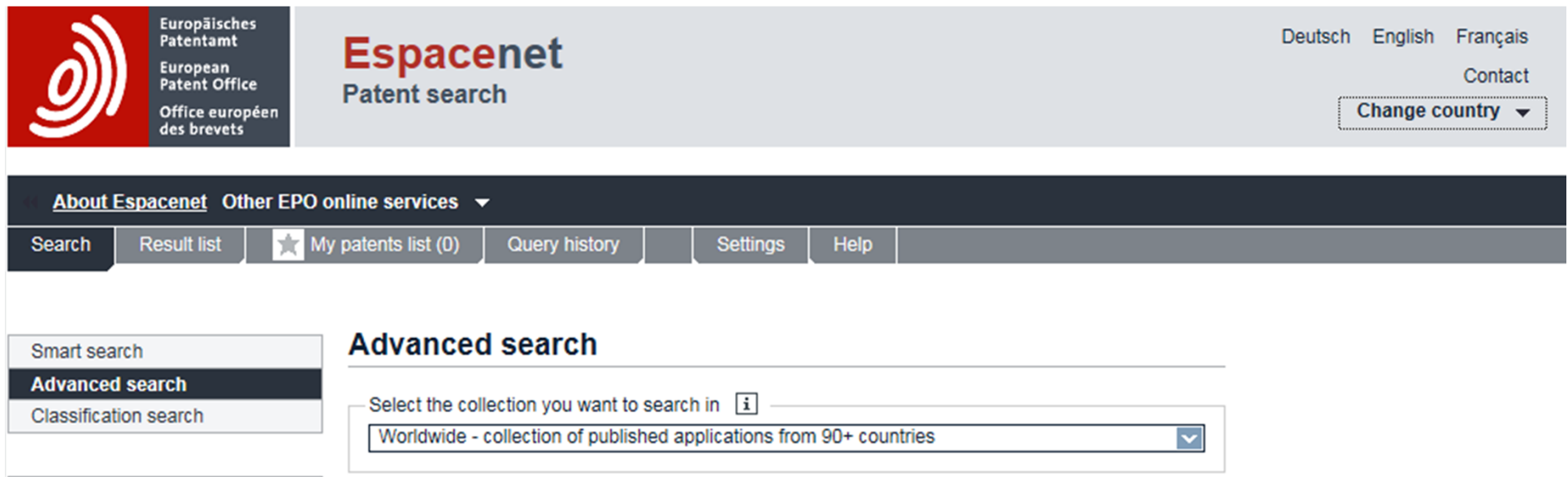
Rank	University	Country	Rank	Nation	Institutions
1	Stanford University	USA	1	USA	50
2	Massachusetts Institute of Technology (MIT)	USA	2	Japan	9
3	Harvard University	USA	3	France	8
4	University of Washington	USA	4	South Korea	8
5	University of Michigan System	USA	5	Germany	6
6	Northwestern University	USA	6	England	5
7	University of Texas System	USA	7	Switzerland	3
8	University of Wisconsin System	USA	8	Belgium	2
9	University of Pennsylvania	USA	9	Canada	2
10	Korea Advanced Institute of Science & Technology (KAIST)	South Korea	10	Israel	2
11	Imperial College London	England	11	Netherlands	2
12	Pohang University of Science & Technology (POSTECH)	South Korea	12	China	1
13	University of California System	USA	13	Denmark	1
14	University of Southern California	USA	14	Singapore	1
15	University of North Carolina, Chapel Hill	USA			
16	KU Leuven	Belgium			

TABLE 1: Countries Comprising the Reuters Top 100 Most Innovative Universities

Genereras ”innovation” vid svenska universitet?



Vad hittar man vid en patentsökning?



The screenshot shows the Espacenet Patent search interface. At the top left is the logo of the European Patent Office (EPO) with text in German, English, and French. The main header features the 'Espacenet Patent search' logo and language options: Deutsch, English, Français, and a 'Contact' link. A 'Change country' dropdown menu is also present. Below the header is a navigation bar with 'About Espacenet' and 'Other EPO online services'. A secondary navigation bar contains 'Search', 'Result list', 'My patents list (0)', 'Query history', 'Settings', and 'Help'. The main content area is titled 'Advanced search' and includes a sidebar with 'Smart search', 'Advanced search', and 'Classification search'. The main search area has a dropdown menu for selecting the collection to search in, currently set to 'Worldwide - collection of published applications from 90+ countries'.

http://worldwide.espacenet.com/advancedSearch?locale=en_EP

Sökning* på svenska universitet

Universitet	Sökord 1	Resultat	Sökord 2	Resultat
Karolinska Institutet	<i>Karolinska Institutet</i>	48	<i>Karolinska Inst Innovations AB</i>	23
Uppsala universitet	<i>Uppsala University</i>	6	<i>Uppsala Universitet Holding AB</i>	0
Lunds universitet	<i>Lund University</i>	5	<i>LU Holding AB</i>	0
Kungliga Tekniska Högskolan	<i>Kungliga Tekniska Högskolan</i>	0	<i>KTH Holding AB</i>	7
Göteborgs universitet	<i>Gothenburg University</i>	1	<i>GU Holding AB</i>	0

*Sökning gjord 18 okt 2017

Två modeller för patentägande

Universitetet äger patent



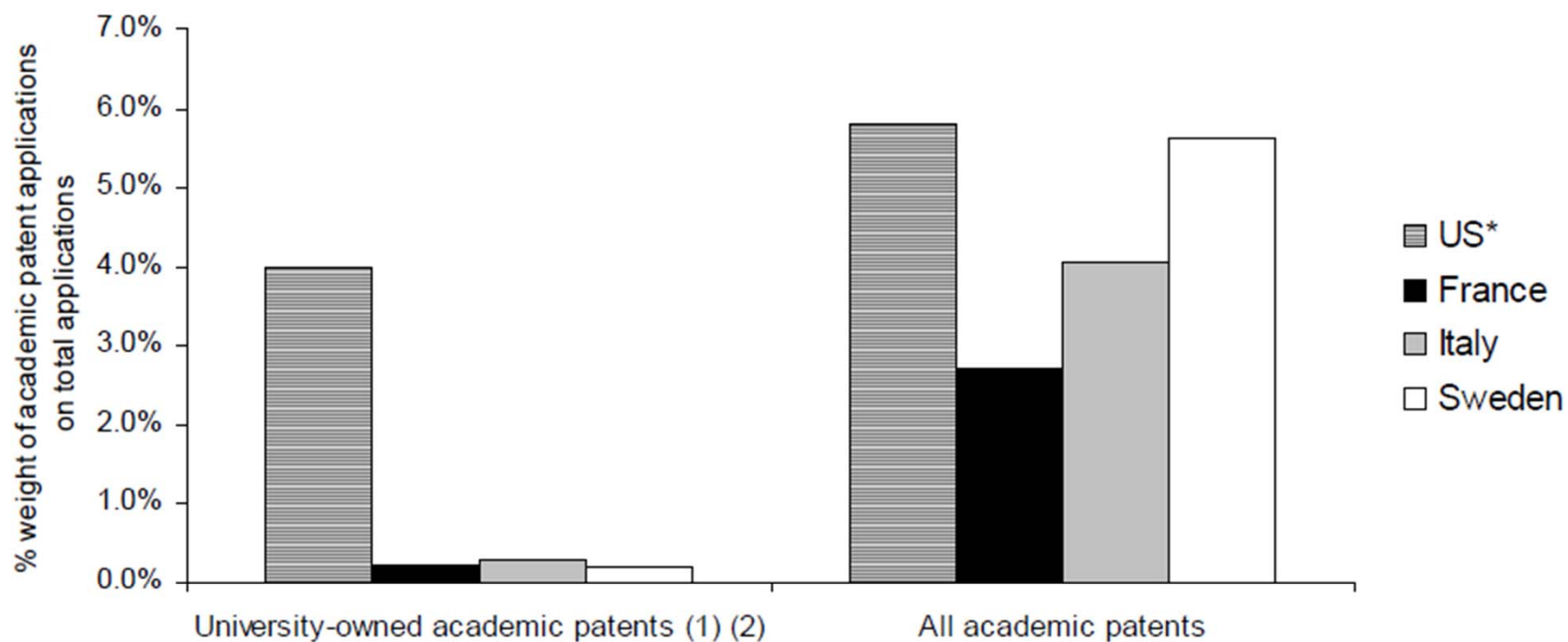
Forskaren äger patent 



Läraryrskommittén



Universitetsägda patent vs. Akademiska patent



(Lissoni et al, 2008)





(11) EP 2 718 723 B1



(12) EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
30.11.2016 Bulletin 2016/48

(51) Int. Cl.:
G01N 33/68 (2006.01) G01N 33/50 (2006.01)
C07K 14/52 (2006.01) C07K 17/00 (2006.01)
A61M 1/36 (2006.01) B01J 20/32 (2006.01)

(21) Application number: 12727680.6

(86) International application number:
PCT/GB2012/051357

(22) Date of filing: 13.06.2012

(87) International publication number:
WO 2012/172347 (20.12.2012 Gazette 2012/51)

(54) DIAGNOSING AND TREATING INFLAMMATORY BOWEL DISEASE AND IRRITABLE BOWEL SYNDROME

DIAGNOSE UND BEHANDLUNG VON ENTZÜNDLICHER DARMERKRANKUNG UND REIZDARMSYNDROM

DIAGNOSTIC ET TRAITEMENT DE LA MALADIE INFLAMMATOIRE DE L'INTESTIN ET DU SYNDROME DU CÔLON IRRITABLE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR

(30) Priority: 13.06.2011 US 201161496442 P

(43) Date of publication of application:
16.04.2014 Bulletin 2014/16

(73) Proprietor: ITH Immune Therapy Holdings AB
171 76 Stockholm (SE)

(72) Inventors:
• WINQVIST, Ola
S-756 53 Uppsala (SE)
• COTTON, Graham
Edinburgh EH13 9PH (GB)

(74) Representative: Zacco Denmark A/S
Arne Jacobsens Allé 15
2300 Copenhagen S (DK)

(56) References cited:
EP-A2- 1 255 112 WO-A1-2008/142405
WO-A1-2011/017120 WO-A2-2010/029317

- AUTSCHBACH F ET AL: "Expression of chemokine receptors in normal and inflamed human intestine, tonsil and liver", CELLULAR IMMUNOLOGY, vol. 236, 23 September 2005 (2005-09-23), pages 110-114, XP002682030,
- M. J. WALTERS ET AL: "Characterization of CCX282-B, an Orally Bioavailable Antagonist of the CCR9 Chemokine Receptor, for Treatment of Inflammatory Bowel Disease", JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, vol. 335, no. 1, 1 October 2010 (2010-10-01), pages 61-69, XP055035781, ISSN: 0022-3565, DOI: 10.1124/jpet.110.169714
- H. HANAI ET AL: "The mode of actions of the Adacolumn therapeutic leucocytapheresis in patients with inflammatory bowel disease: a concise review", CLINICAL & EXPERIMENTAL IMMUNOLOGY, vol. 163, no. 1, 16 November 2010 (2010-11-16), pages 50-58, XP055035673, ISSN: 0009-9104, DOI: 10.1111/j.1365-2249.2010.04279.x
- LUDVIG LINTON ET AL: "CCR9-expressing CD14+HLA-DRhi blood monocytes promote intestinal inflammation in IBD", JOURNAL OF TRANSLATIONAL MEDICINE, vol. 9, no. Suppl 2, 23 November 2011 (2011-11-23), page P32, XP055035715, ISSN: 1479-5876, DOI: 10.1186/1479-5876-9-S2-P32



Charlotta Dahlborg, Danielle Lewensohn

718 723 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent



(11)

EP 2 718 723 B1

(12)

EUROPEAN PATENT SPECIFICATION

Patent grant date

(45) Date of publication and mention of the grant of the patent:
30.11.2016 Bulletin 2016/48

(51) Int Cl:
G01N 33/68 (2006.01) G01N 33/50 (2006.01)
C07K 14/52 (2006.01) C07K 17/00 (2006.01)
A61M 1/36 (2006.01) B01J 20/32 (2006.01)

Registration number

Application number

(21) Application number 12727680.6

(86) International application number:
PCT/GB2012/051357

Filing date

(22) Date of filing 13.06.2012

(87) International publication number:
WO 2012/172347 (20.12.2012 Gazette 2012/51)

Title of invention

(54) **DIAGNOSING AND TREATING INFLAMMATORY BOWEL DISEASE AND IRRITABLE BOWEL SYNDROME**
DIAGNOSE UND BEHANDLUNG VON ENTZÜNDLICHER DARMERKRANKUNG UND REIZDARMSYNDROM
DIAGNOSTIC ET TRAITEMENT DE LA MALADIE INFLAMMATOIRE DE L'INTESTIN ET DU SYNDROME DU CÔLON IRRITABLE

Countries protected

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

- AUTSCHBACH F ET AL: "Expression of chemokine receptors in normal and inflamed human intestine, tonsil and liver", CELLULAR IMMUNOLOGY, vol. 236, 23 September 2005 (2005-09-23), pages 110-114, XP002682030,
- M. J. WALTERS ET AL: "Characterization of CCX282-B, an Orally Bioavailable Antagonist of the CCR9 Chemokine Receptor, for Treatment of Inflammatory Bowel Disease", JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, vol. 335, no. 1, 1 October 2010 (2010-10-01), pages 61-69, XP055035781, ISSN: 0022-3565, DOI: 10.1124/jpet.110.169714
- H. HANAI ET AL: "The mode of actions of the Adacolumn therapeutic leucocytapheresis in patients with inflammatory bowel disease: a concise review", CLINICAL & EXPERIMENTAL IMMUNOLOGY, vol. 163, no. 1, 16 November 2010 (2010-11-16), pages 50-58, XP055035673, ISSN: 0009-9104, DOI: 10.1111/j.1365-2249.2010.04279.x
- LUDVIG LINTON ET AL: "CCR9-expressing CD14+HLA-DRhi blood monocytes promote intestinal inflammation in IBD", JOURNAL OF TRANSLATIONAL MEDICINE, vol. 9, no. Suppl 2, 23 November 2011 (2011-11-23), page P32, XP055035715, ISSN: 1479-5876, DOI: 10.1186/1479-5876-9-S2-P32

Priority date

(30) Priority: 13.06.2011 US 201161496442 P

Publication date

(43) Date of publication of application:
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Patent assignees

(73) Proprietor: ITH Immune Therapy Holdings AB
171 76 Stockholm (SE)

Inventors

(72) Inventors:
WINQVIST, Ola
S-756 53 Uppsala (SE)
COTTON, Graham
Edinburgh EH13 9PH (GB)

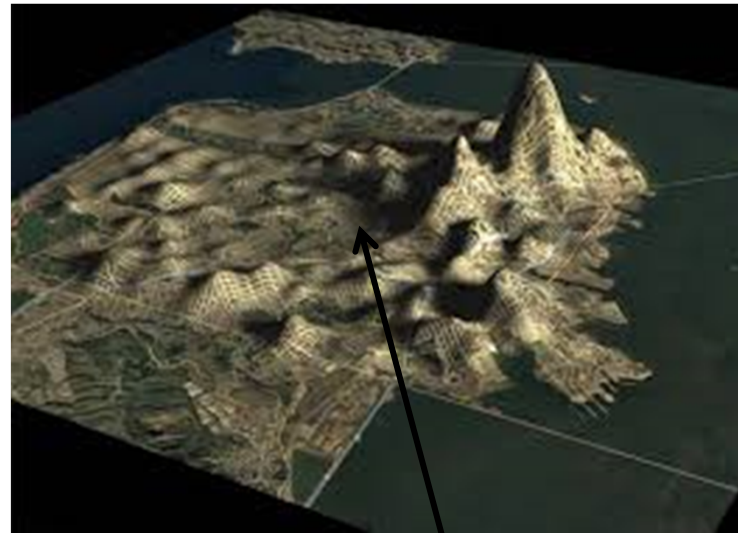
Citations

(74) Representative: Zacco Denmark A/S
Arne Jacobsens Allé 15
2300 Copenhagen S (DK)

(56) References cited:
EP-A2- 1 255 112 WO-A1-2008/142405
WO-A1-2011/017120 WO-A2-2010/029317

718 723 B1





“Lake of opportunities”

“Occupied technology clusters”

Richard Seymour *Platinum Metals Rev.*, 2006, **50**, (1), 27 Fig. 1 A patent landscape based on ~ 3400 patents in which osmium is mentioned in the title, abstract or claims

Vad är KIIP-projektet?

- *En patentkartläggning av 7000 forskare*

Syfte:

1. Utveckla en metod för att identifiera akademiska patent
2. Kartlägga Karolinska Institutets forskares patent över en 15-årsperiod (1995-2010)
3. Analysera universitetets innovationslandskap

KIIP = Karolinska Institutet Intellectual Property

Fallet Karolinska Institutet

- ett medicinskt universitet



Fallstudie



Forskarpopulation

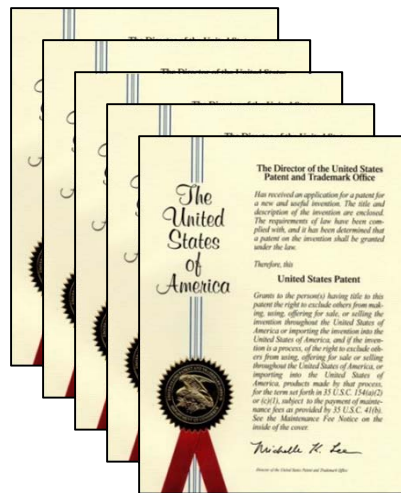


**KIIP (Karolinska
Institutet Intellectual
Property) project**

Datinsamling - "name matching"



Alla forskare



Name matching

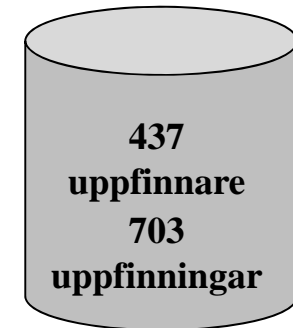


~900 000 patent
dokument

Validation



Adding, cleaning
and categorising



KIIP-databasen

Patentinformation

Metodologiska utmaningar

<i>Name:</i>	<i>Variant 1:</i>	<i>Variant 2:</i>
Åke Älg	Ake Alg	Aake Aelg

<i>Input</i>		<i>Output</i>
Sven Svensson1	Manual validation through desktop research, e-mails, phone calls	Sven Svensson1, Volvo – FALSE
Sven Svensson2		Sven Svensson2, Ericsson – FALSE
Sven Svensson3		Sven Svensson3, AstraZeneca – FALSE
Sven Svensson4		Sven Svensson4, KI inventor – TRUE
Sven Svensson5		Sven Svensson5, KI inventor – FALSE

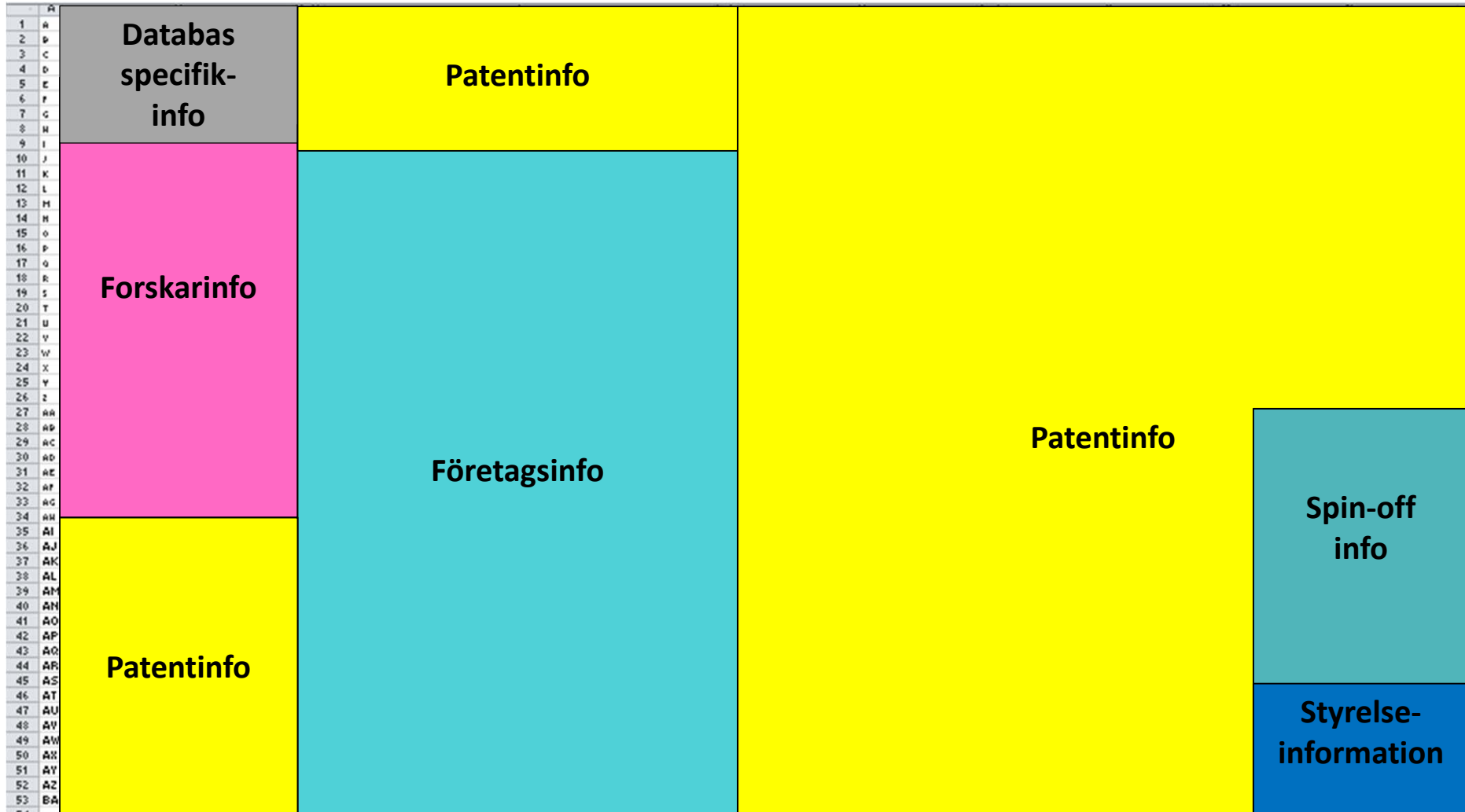
(Dahlborg, Lewensohn & Sundberg 2013)

Metodologiska utmaningar

- homonymy: "same name problem"



KIIP:s informationsrikiedom



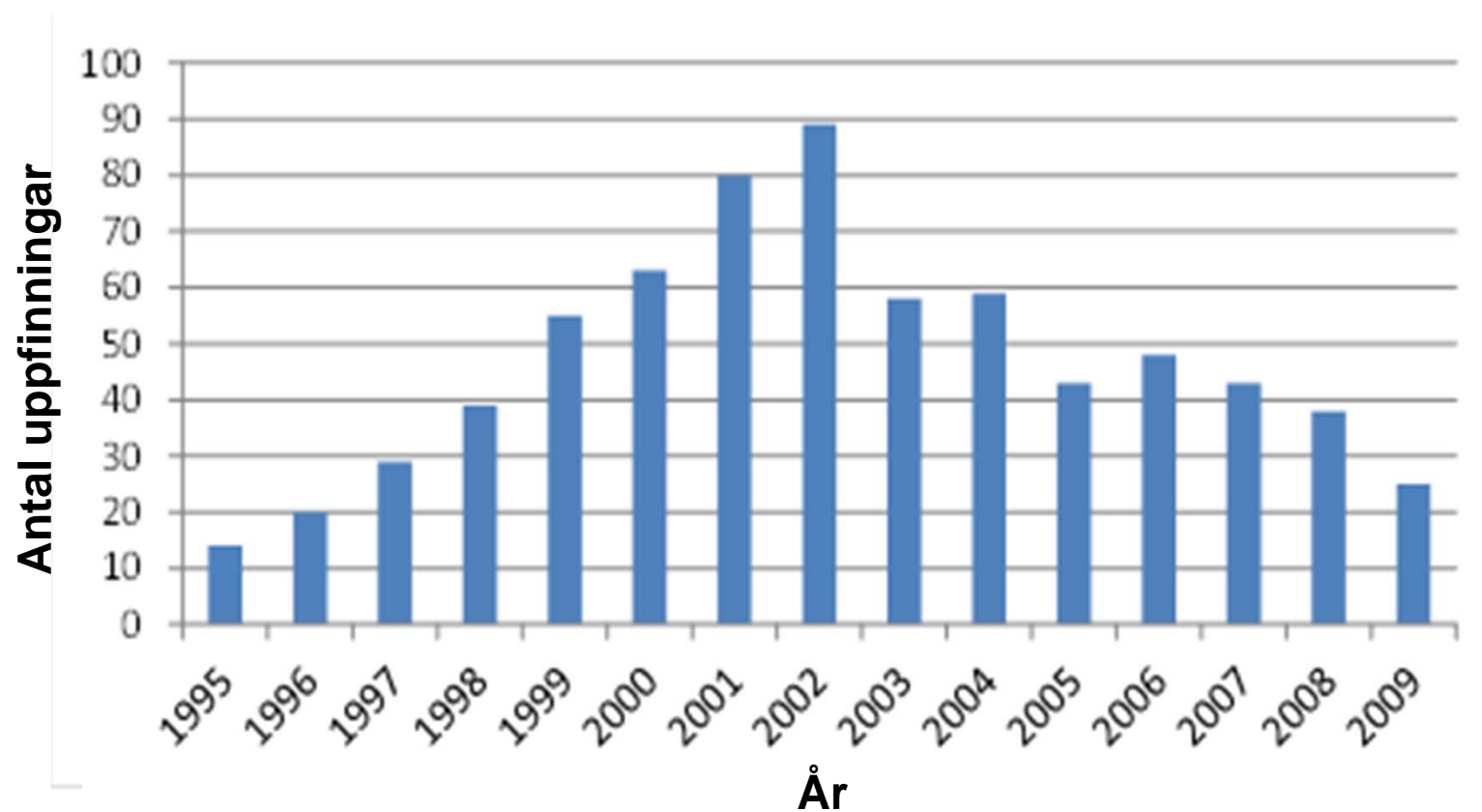


BLOCK 3: Vad döljer sig i innovationslandskapet?

Utvalda frågor

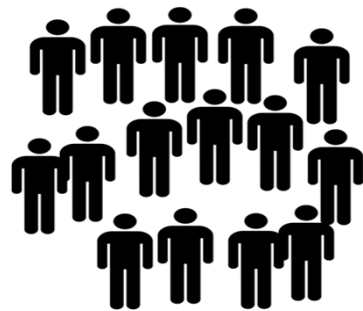
1. Hur utbredd är patenteringen?
2. Hur ser forskar- och företagsnätverken ut?
3. Vem äger patenten?
4. Hur stor del av patenten upprätthålls?
5. Hur initieras patentering?

1. Hur utbredd är patenteringen? (a)



(Dahlborg, Lewensohn & Sundberg 2013)

1. Hur utbredd är patenteringen? (b)



*Research
population*

100%



*Inventor
population*

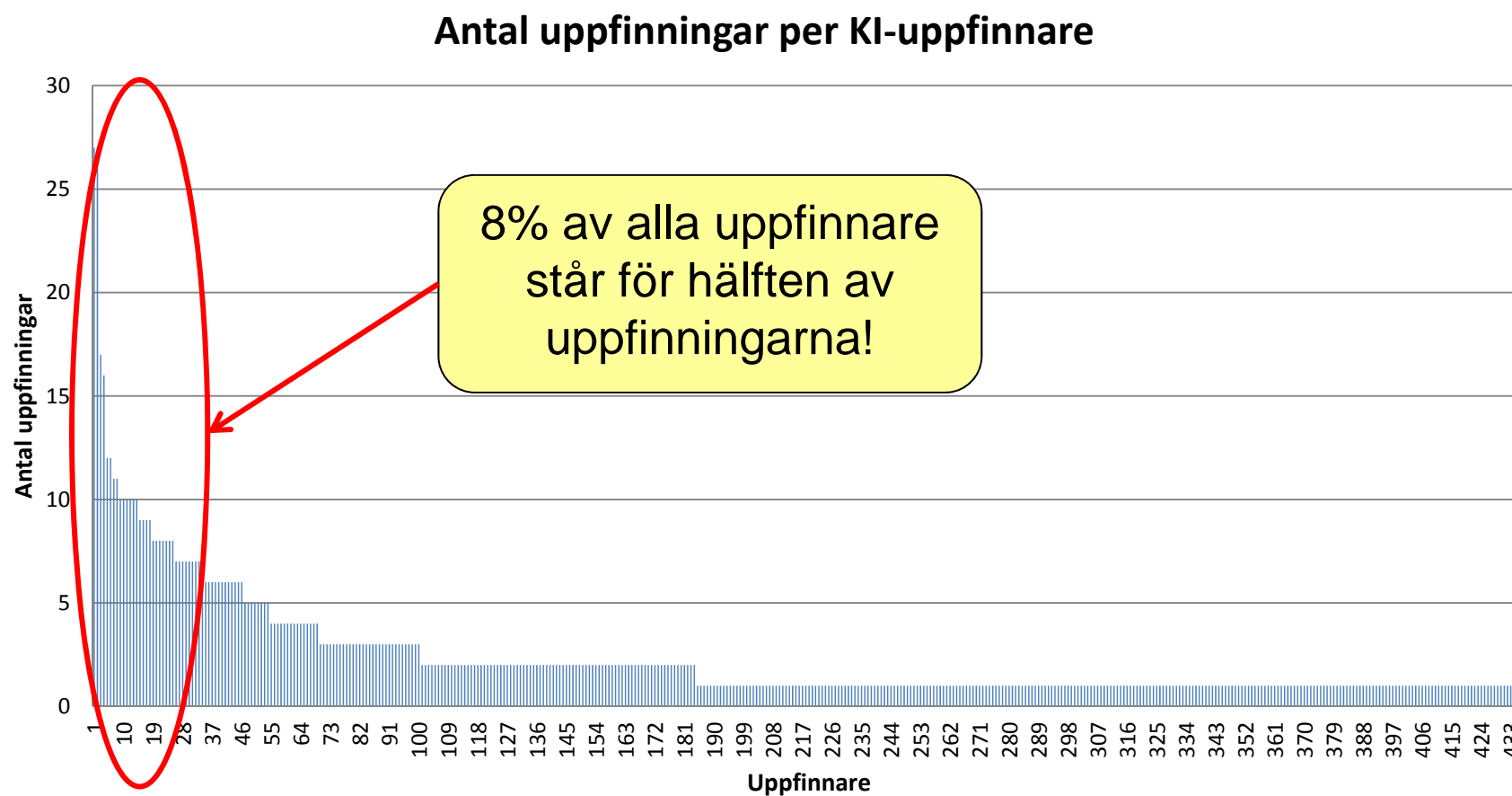
6%



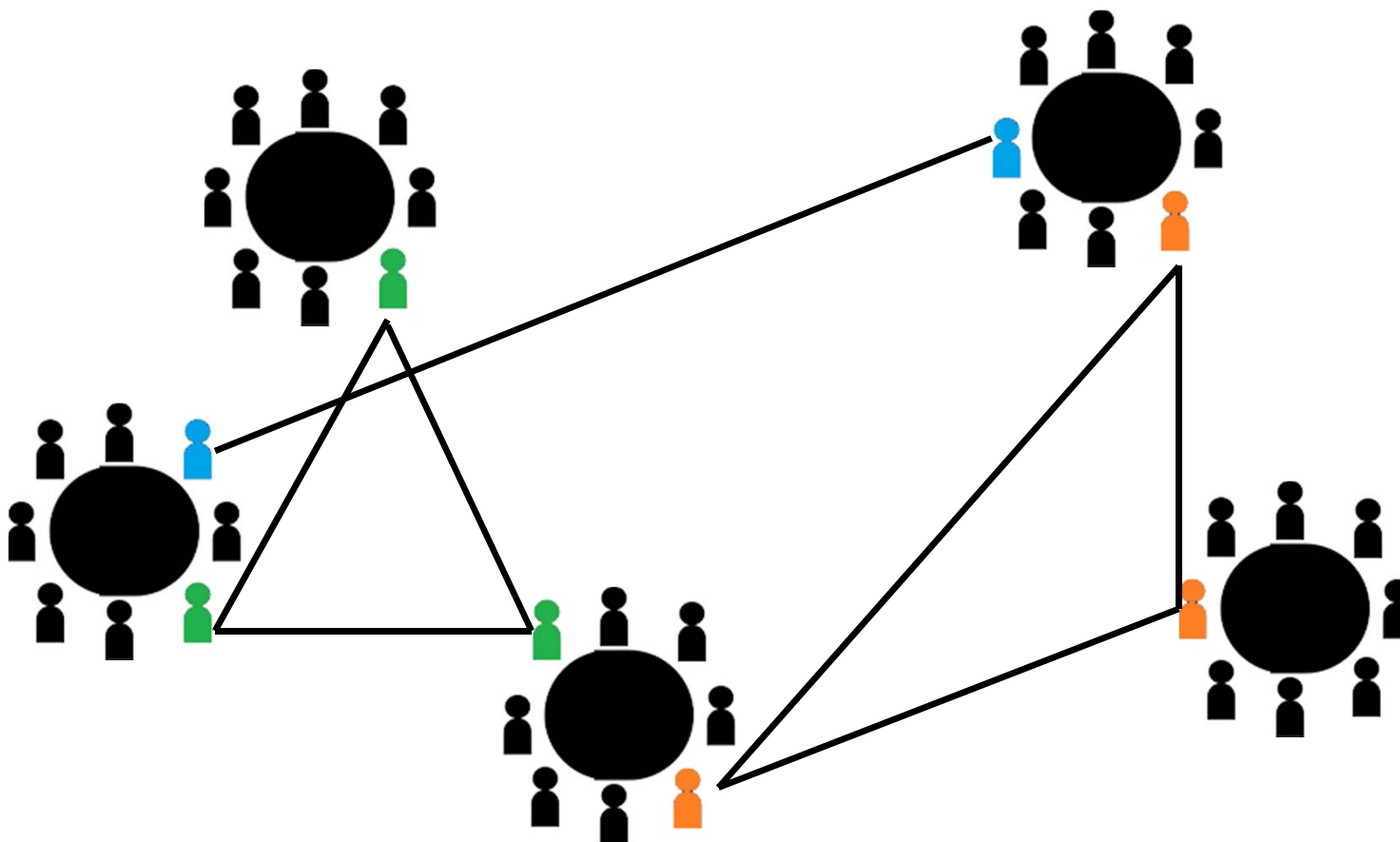
*Serial inventor
population*

0,05%

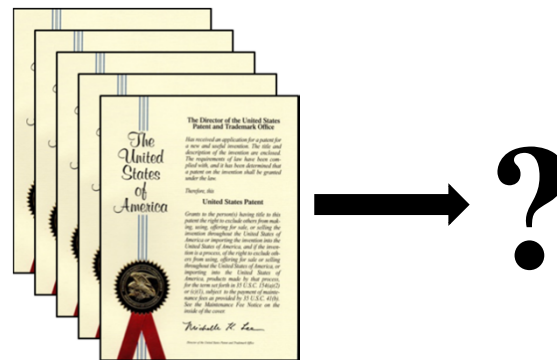
1. Hur utbredd är patenteringen? (c)



2. Hur ser nätverken ut? (a)



3. Vem äger patenten? (a)



3. Vem äger patenten? (b)

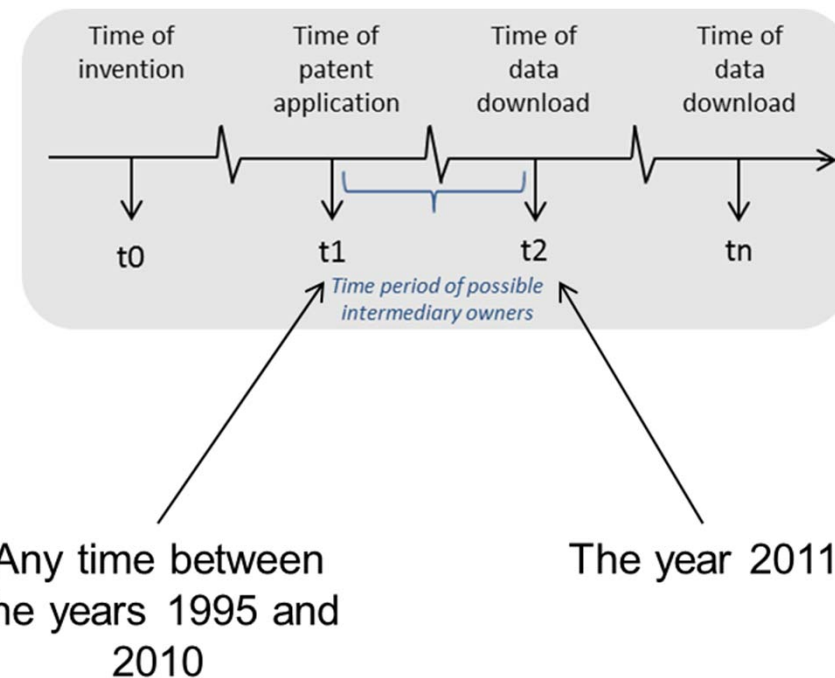
Karolinska Institutet 1995-2010	Ägare vid patentansökan
Individual	17%
Small and Medium sized firms (SME)	51%
Multinational company (MNC)	8%
Research organization (RO)	6%
Technology transfer organization (TTO)	12%
Other	3%
Unassigned	4%
Total	100%

(Dahlborg, Lewensohn, Danell & Sundberg 2016)

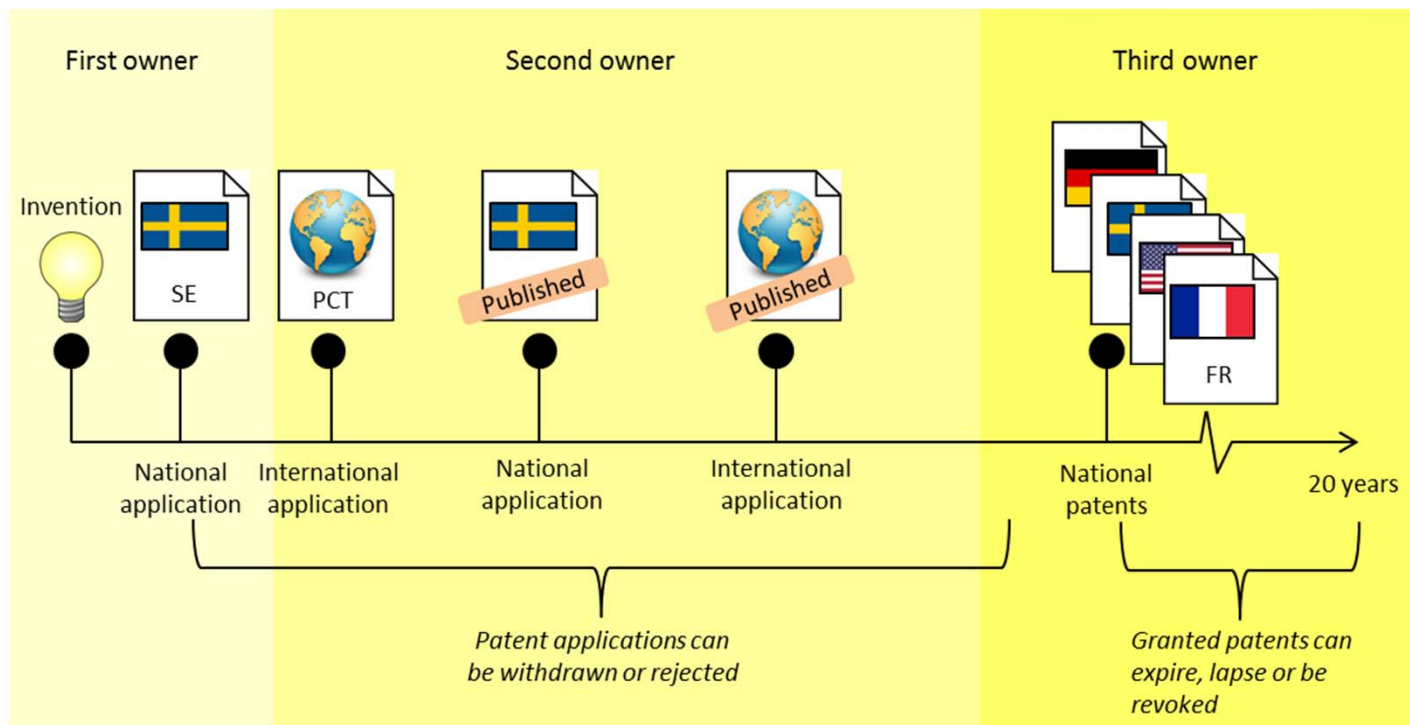
3. Vem äger patenten? (c)

Patenten når marknaden på tre sätt:

1. *Autonomous* 17%
2. *Bridge* 19%
3. *Corporate* 64%

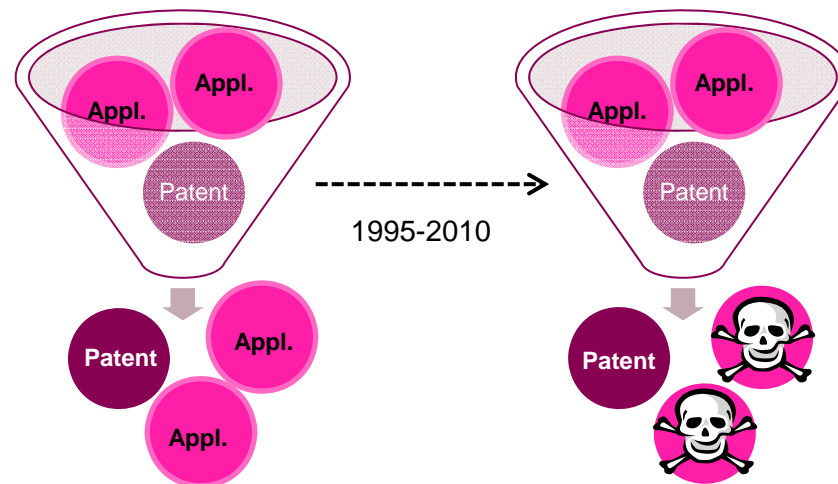


4. Hur stor del av patenten upprätthålls patenten? (a)



(Lewensohn, 2017, *Doctoral Thesis*)

4. Hur stor del av patenten upprätthålls? (b)



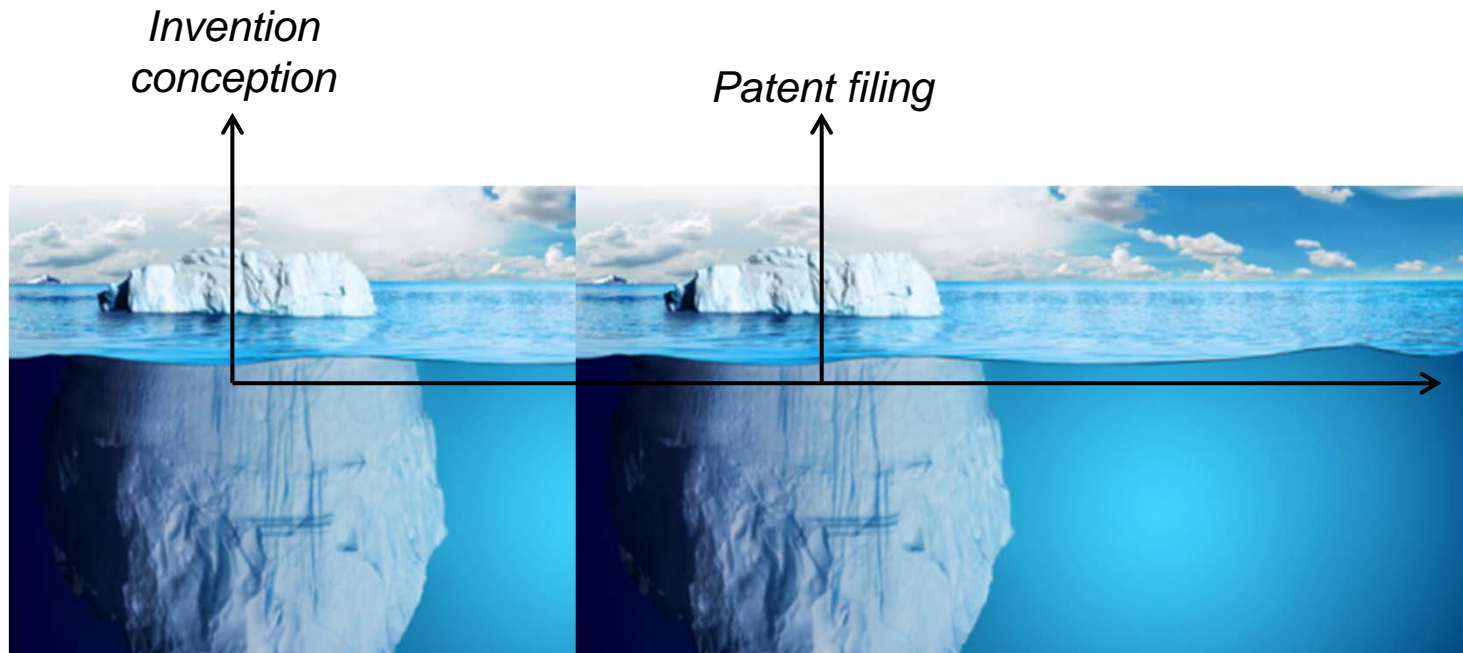
23% av de godkända
patenten (EP) upprätthålls

$N=500$

$N=40$

(Lewensohn, Dahlborg, Kowalski & Lundin 2015)

5. Hur initieras patentering? (a)



***Killer whale or like a
jelly fish behaviour?***



5. Hur initieras patentering? (b)



Inventor E, Occasional inventor

‘I **presented the results to the company** and they said that they were not interested. They were more therapeutically oriented. **Then I presented it to the TTO** and they were not either that interested since they wanted to invest in drugs. Then, as a third option, **I contacted the TTO at Oslo university**. They were interested.’



‘I was in touch with people at this company, who were interested in what we did. I think they were paying attention to what was going on in my supervisor’s group. **It was them that encouraged us** to patent our research results.’



(Lewensohn, 2017, *Doctoral Thesis*)

5. Hur initieras patentering? (c)



Inventor G, Serial inventor

‘It was **them that pushed it**, the Stockholm university group. It was them that really lead this. They had the substances. They were made in their laboratory.’



‘The company though...**they wanted**, I mean they were experienced in this area. They also have the **muscles, money and contact**. So they patented this and I was named inventor.’



‘Yes, that patent is still alive and it is **mostly me that has been the driving force**, trying to get in touch with different pharmaceutical companies. To move on you need to have contacts’



(Lewensohn, 2017, *Doctoral Thesis*)



BLOCK 4: Nästa resmål?

Vad är nästa steg?

Nationell, systematisk kartläggning av immateriella tillgångar (t.ex. patent, licenser, samarbeten) på Sveriges universitet och högskolor

Innovationsportföljer



NyTeknik

"Vi föreslår att akademiska innovationsportföljer upprättas där information om patent, licenser och företagssamarbeten samlas in kontinuerligt. Sådana portföljer skulle kunna användas i innovationsrådgivning och i utvärdering av forskare."

(Lewensohn, Dahlborg, Lundin, Sundberg, NyTeknik, 26 maj 2015)

Varför?

1. För att sätta Sverige på kartan när det gäller universitetens innovationsstatistik - *Innometrics*
2. Stärka Sveriges konkurrenskraft genom att fatta beslut om innovationsstödande aktiviteter och åtgärder
3. Standardiserade indikatorer för innovation möjliggör benchmarking
4. På sikt påverka attityder och kultur gällande innovation på universiteten – stärka samverkan och den "tredje uppgiften"

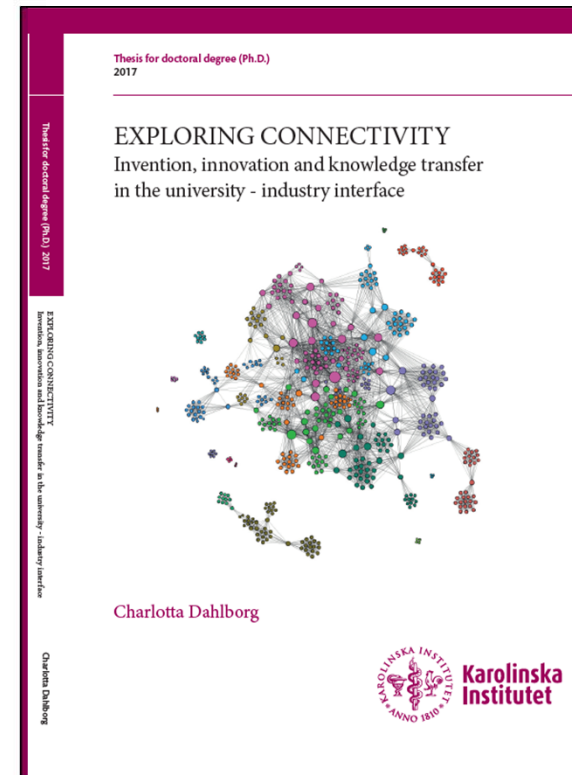
Take home messages

1. One-size-doesn't-fit-all: anpassa stödverksamhet och incitament till respektive universitet och region!
2. Skapa en nationell infrastruktur för patent- och annan innovationsstatistik
3. Använd innovationsstatistik med eftertanke!

Tack för er uppmärksamhet!

danielle.lewensohn@ki.se

charlotta.dahlborg@ki.se



SLUT