Patentable Subject Matter

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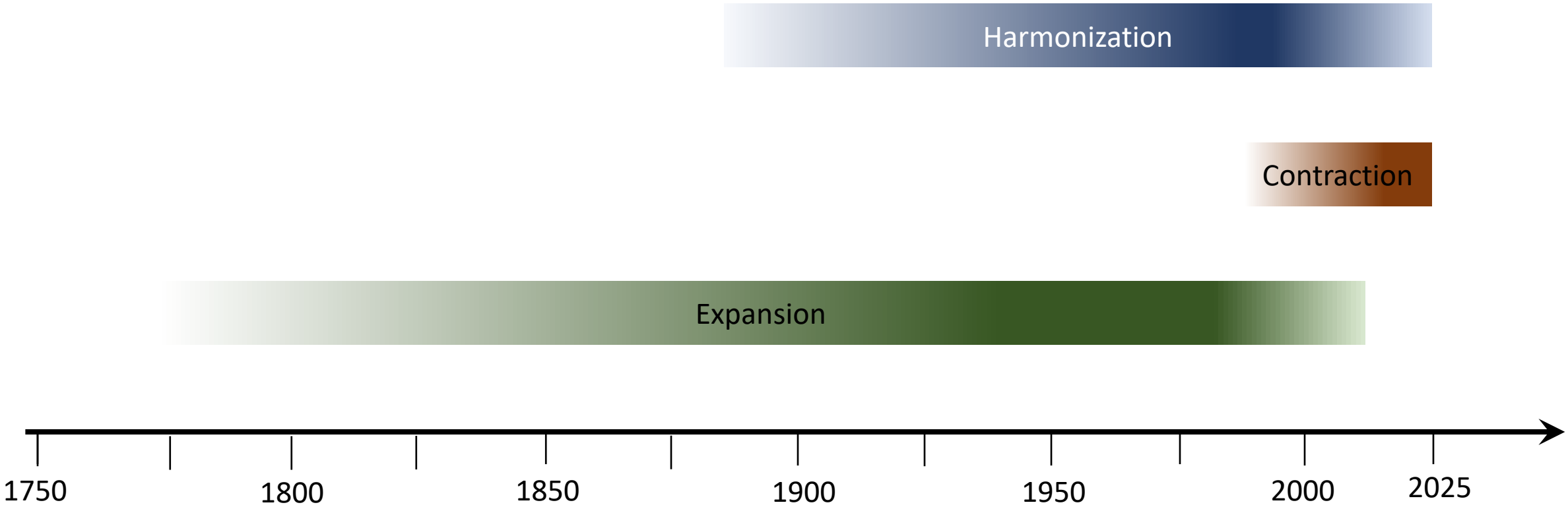
The following images appear in the background of the lecture on “Patentable Subject Matter” in the PatentX lecture series. A recording of the lecture itself is available at https://ipxcourses.org/lectures-2/. Removed from their original context, the images will not make much sense. The function of this collection of images is to enable persons who have already watched the lecture to review the material it contains.

Global Trends in Subject Matter Coverage



Constitution of the United States: Article 1, Section 8, Clause 8

The Congress shall have Power … To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries

Patent Act of 1790

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That upon the petition of any person or persons to the Secretary of State, the Secretary for the department of war, and the Attorney General of the United States, setting forth, that he, she, or they, hath or have invented or discovered any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used, and praying that a patent may be granted therefor, it shall and may be lawful to and for the said Secretary of State, the Secretary for the department of war, and the Attorney General, or any two of them, if they shall deem the invention or discovery sufficiently useful and important, to cause letters patent to be made out in the name of the United States….

Patent Act of 1790

> … any useful art, manufacture, engine, machine, or device, or any improvement therein …

Patent Act of 1793

> … any new and useful art, machine, manufacture, composition of matter, or any new and useful improvement …

Patent Act of 1952

> … any new and useful process, machine, manufacture, composition of matter, or any new and useful improvement …

a way of doing something

Patent Act of 1790

… any useful art, manufacture, engine, machine, or device, or any improvement therein …

Patent Act of 1793

… any new and useful art, machine, manufacture, composition of matter, or any new and useful improvement …

Patent Act of 1952

… any new and useful process, machine, manufacture, composition of matter, or any new and useful improvement …

artificial structure with moving parts

Patent Act of 1790

… any useful art, manufacture, engine, machine, or device, or any improvement therein …

Patent Act of 1793

… any new and useful art, machine, manufacture, composition of matter, or any new and useful improvement …

Patent Act of 1952

… any new and useful process, machine, manufacture, composition of matter, or any new and useful improvement …

static artificial structure

Patent Act of 1790

… any useful art, manufacture, engine, machine, or device, or any improvement therein …

Patent Act of 1793

… any new and useful art, machine, manufacture, composition of matter, or any new and useful improvement …

Patent Act of 1952

… any new and useful process, machine, manufacture, composition of matter, or any new and useful improvement …

chemical compound

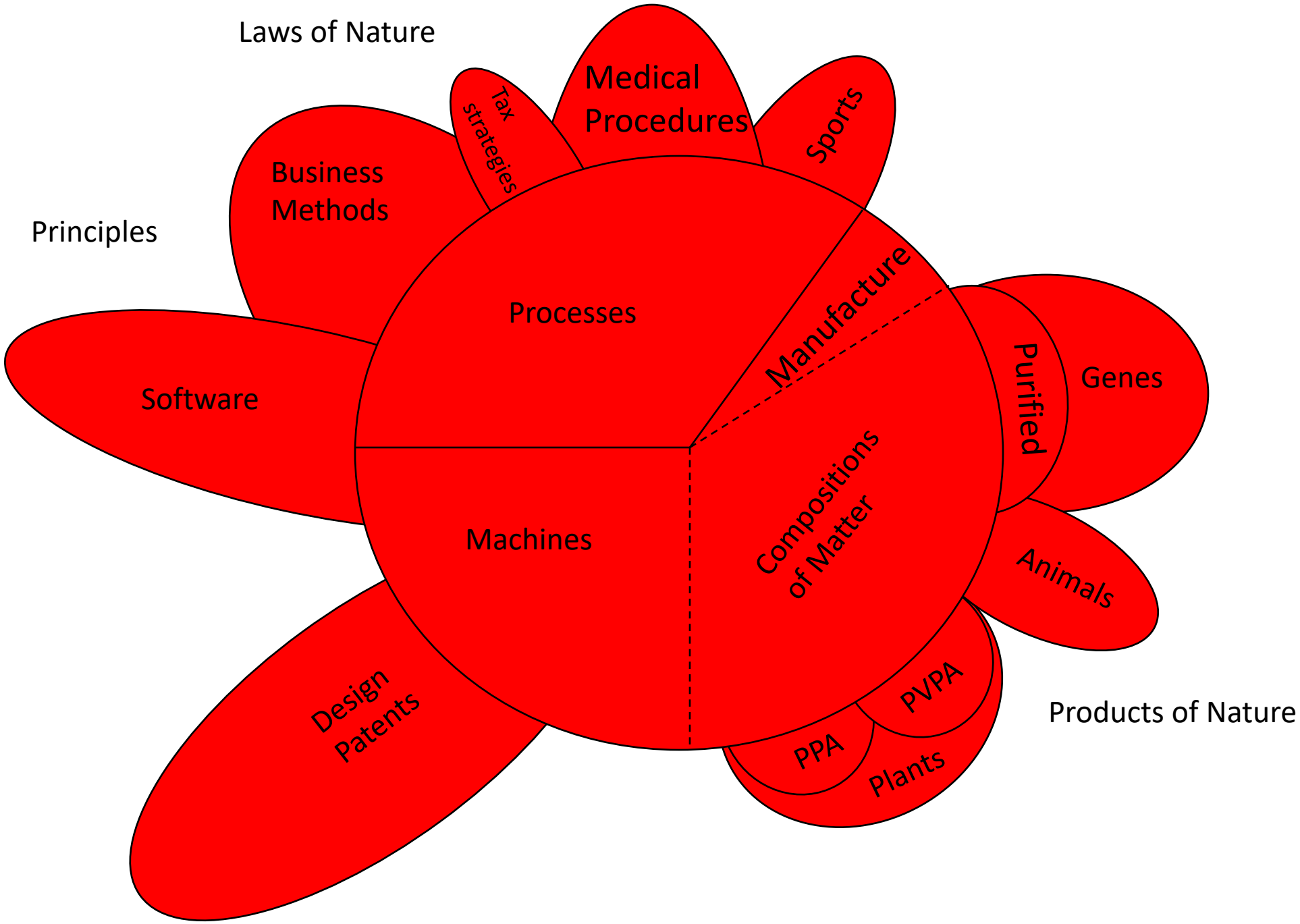

Laws of Nature
Medical Procedures
Tax strategies
Sports
Business Methods
Principles
Processes
Manufacture
Software
Purified
Genes
Compositions of Matter
Machines
Animals
Design Patents
PVPA
PPA
Plants
Products of Nature

TABLE 1
LITIGATION OF PATENTED INVENTIONS, 1800–1860

Decade	Patent Cases	Number of Patents Litigated	Total Patents	Cases as Percentage of All Patents
1800–1809	6	6	911	0.6
1810–1819	37	20	1,998	1.8
1820–1829	36	27	2,697	1.3
1830–1839	37	14	5,077	0.7
1840–1849	198	95	5,516	3.6
1850–1859	415	171	19,661	2.1
1860	64	18	4,363	1.5

Source: Zorina Kahn, "Property Rights and Patent Litigation in Early Nineteenth Century America," Journal of Economic History 55 (1995), 58-97

TABLE 2
PERCENTAGE DISTRIBUTION OF PATENTS AND CASES BY REGION AND SECTOR, 1790–1860
(row percentages)

	Agriculture	Building	Manufacturing	Transportation	Other	Total
Northern New England						
Cases	20.0	20.0	50.0	10.0	0.0	1.7
Patents	27.3	21.3	38.8	7.8	4.9	7.7
Southern New England						
Cases	13.0	17.6	55.6	6.5	7.4	18.5
Patents	13.2	16.4	53.4	9.5	7.5	21.0
New York						
Cases	10.8	22.8	45.6	15.2	5.7	27.0
Patents	22.9	17.9	38.1	13.4	7.8	31.7
Pennsylvania						
Cases	11.1	16.7	33.3	22.2	16.7	12.3
Patents	19.0	14.4	41.6	14.9	10.1	13.6
Southern Mid-Atlantic						
Cases	11.8	17.6	58.8	11.8	0.0	2.9
Patents	24.9	2.3	35.1	18.3	9.3	7.4
Midwest						
Cases	13.1	31.2	42.6	11.5	1.6	10.4
Patents	33.3	16.3	31.6	12.5	6.3	6.4
District of Columbia						
Cases	15.9	19.6	38.4	15.9	10.1	23.6
Patents	12.5	25.0	34.0	21.9	6.0	1.4
Other						
Cases	28.6	28.6	19.1	9.5	14.3	3.6
Patents	34.8	15.8	27.4	11.8	7.0	9.8
Total Cases	79	124	254	81	47	585
Percent	13.5	21.2	43.4	13.9	8.0	100
Total Patents	1,009	753	812	580	361	4,515
Percent	22.4	16.7	40.1	12.9	8.0	100

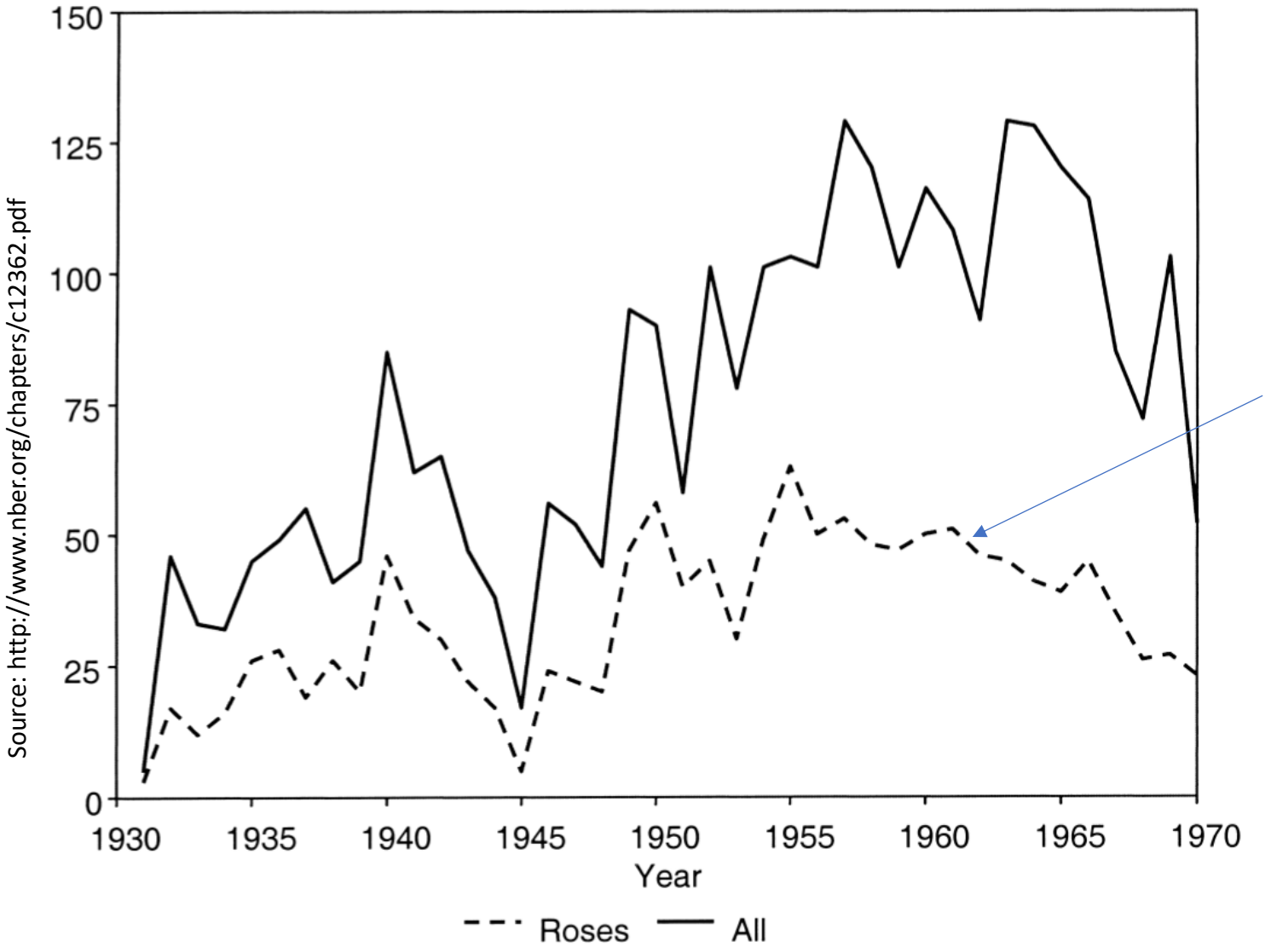
Source: Zorina Kahn, “Property Rights and Patent Litigation in Early Nineteenth Century America,” Journal of Economic History 55 (1995), 58-97

Asexual Reproduction

Asexual reproduction is the propagation of a plant without the use of fertilized seeds to assure an exact genetic copy of the plant being reproduced. Any known method of asexual reproduction which renders a true genetic copy of the plant may be employed. Acceptable modes of asexual reproduction would include but may not be limited to:

Rooting Cuttings	Grafting and Budding
Apomictic Seeds	Bulbs
Division	Slips
Layering	Rhizomes
Runners	Corms
Tissue Culture	Nucellar Embryos

Source: https://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/general-information-about-35-usc-161#heading-4



Source: http://www.nber.org/chapters/c12362.pdf

Fig. 8.3 Plant patents per year, 1931–1970

Notes: Plant patents from the USPTO *Patent Statistic Reports* (available at www.uspto.gov).

Source: https://www.newswire.com/news/weeks-roses-introduces-seven-new-rose-varieties-for-spring-2017-18800198

Patent No. 5,080,111

Abstract:

- A substantially self-sealing episcleral incision having an approximate central point 1.5 to 3.0 millimeters posterior to the limbus. Portions of the incision extending from the approximate central point extend laterally away from the curvature of the limbus. The configuration of the self-sealing incision allows the incision to seal as the eye is inflated following surgery and therefore requires no sutures for sealing. Accordingly, the probability of astigmatism is eliminated or greatly reduced and the reliance on sutures is eliminated.

BRIEF DESCRIPTION OF THE DRAWINGS

- FIG. 1 is a schematic representation of a top view of a human eye;
- FIG. 2 is a schematic representation of the interior of a human eye; and
- FIGS. 3-4 are highly enlarged representations of the configurations of incisions in accordance with the present invention.

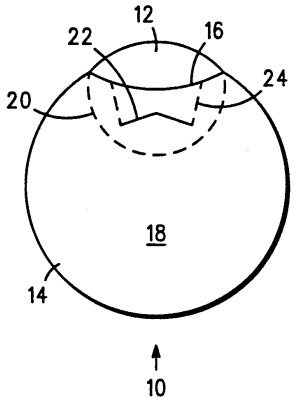


FIG. 1

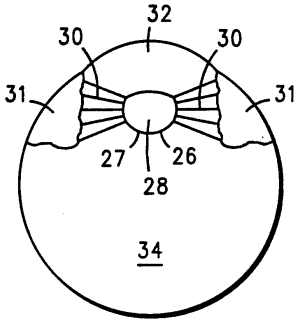


FIG. 2

FIG. 3

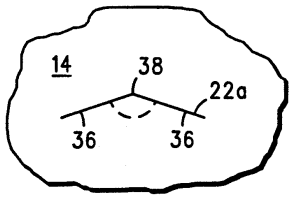
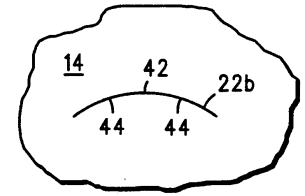


FIG. 4



Patent No. 5,960,411 (Sept. 28, 1999)

Abstract:

- A method and system for placing an order to purchase an item via the Internet. The order is placed by a purchaser at a client system and received by a server system. The server system receives purchaser information including identification of the purchaser, payment information, and shipment information from the client system. The server system then assigns a client identifier to the client system and associates the assigned client identifier with the received purchaser information. The server system sends to the client system the assigned client identifier and an HTML document identifying the item and including an order button. The client system receives and stores the assigned client identifier and receives and displays the HTML document. In response to the selection of the order button, the client system sends to the server system a request to purchase the identified item. The server system receives the request and combines the purchaser information associated with the client identifier of the client system to generate an order to purchase the item in accordance with the billing and shipment information whereby the purchaser effects the ordering of the product by selection of the order button.

Patent No. 5,800,268
(Sept. 1, 1998)

Abstract:

- A method by which a player may participate in a live casino game from a location remote from the casino is disclosed. A player establishes an information link with a casino from an interface station including a video monitor and keypad. In response to the player's entry of financial account information, the casino establishes an information line with the player's financial institution. The casino assigns the player to a gaming table at which a "live" game is occurring, transmitting all images of game play and instructions to the player. The player transmits bet and game play information to the casino. Because of the open line between the casino and player's financial institution, bets are checked, winnings paid, and losses debited, instantaneously.

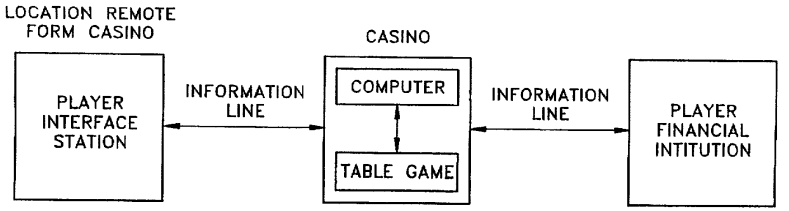


FIG. 1

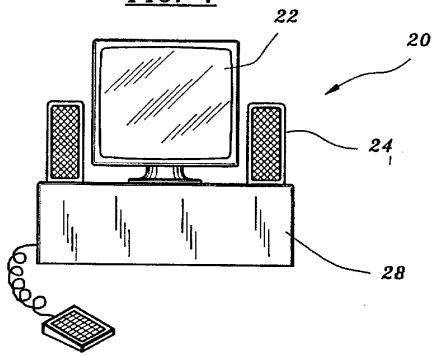


FIG. 2

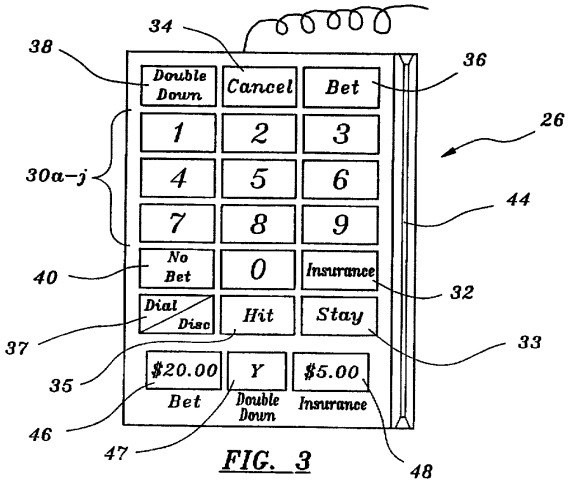


FIG. 3

Patent No. 5,191,573 (March 2, 1993)

Abstract:

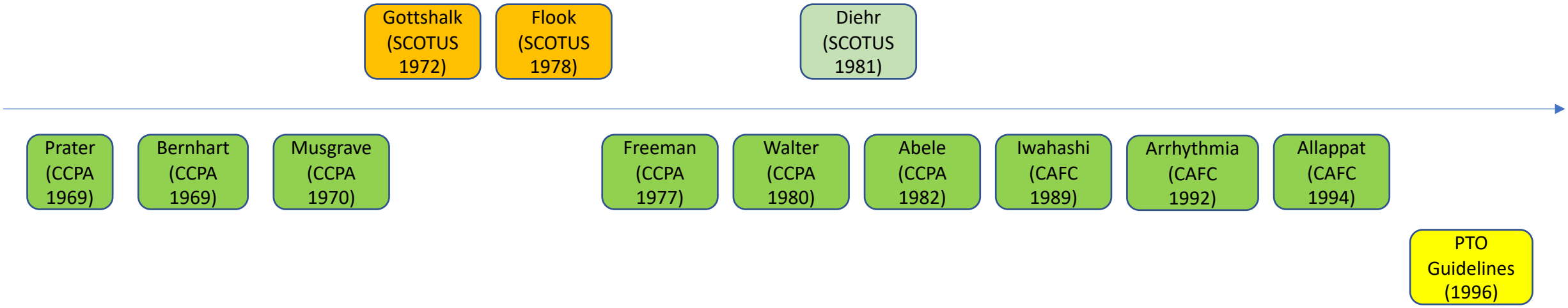
- The present invention is a method for transmitting a desired digital video or audio signal stored on a first memory of a first party to a second memory of a second party. The method comprises the steps of transferring money via a telecommunications line to the first party from the second party. Additionally, the method comprises the step of then connecting electronically via a telecommunications line the first memory with the second memory such that the desired signal can pass therebetween. Next, there is the step of transmitting the desired digital signal from the first memory with a transmitter in control and in possession of the first party to a receiver having the second memory at a location determined by the second party. The receiver is in possession and in control of the second party. There is also the step of then storing the digital signal in the second memory.

Patent No. 5,848,396 (Dec. 8, 1998)

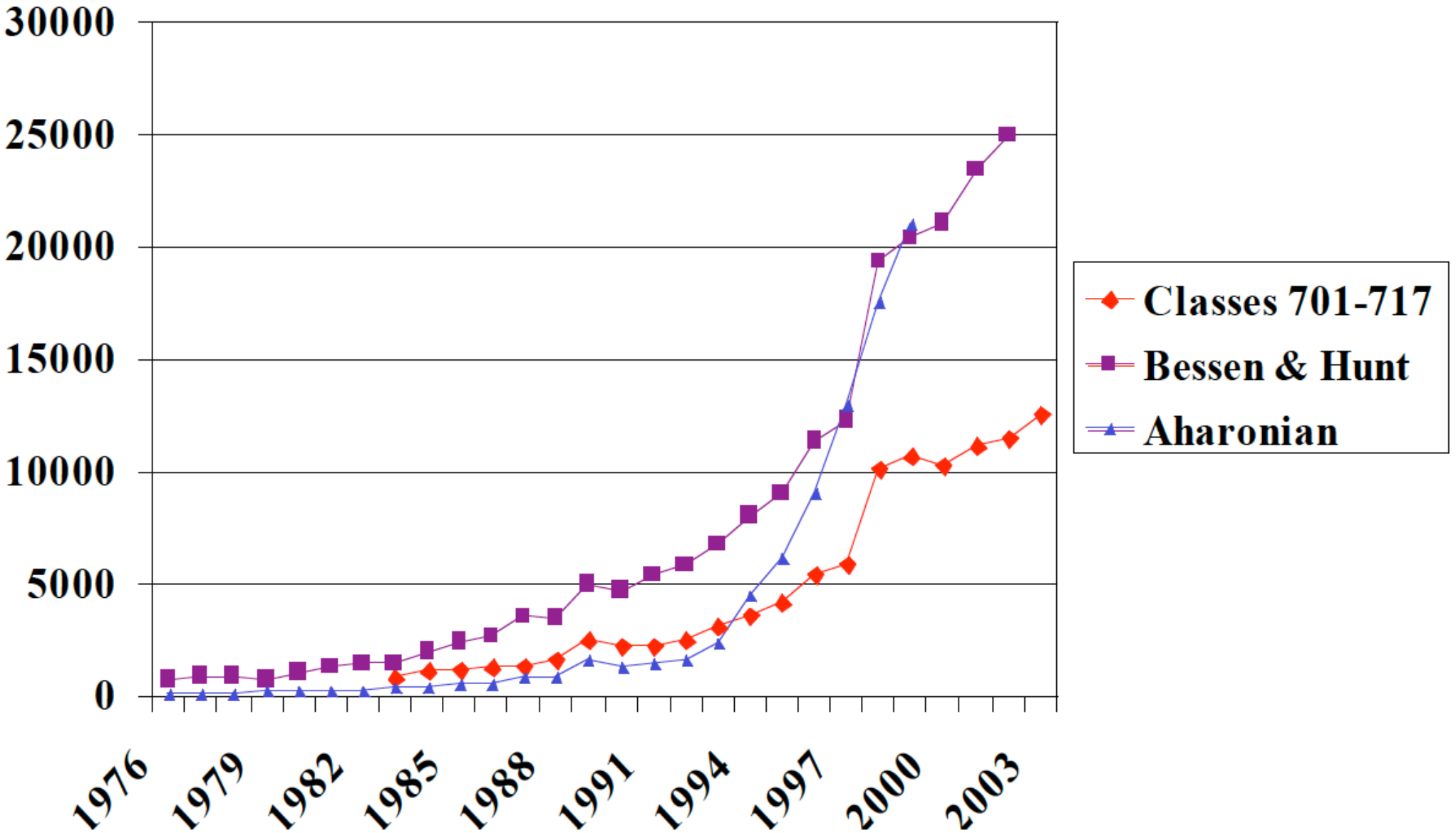
Abstract:

- Computer network method and apparatus provides targeting of appropriate audience based on psychographic or behavioral profiles of end users. The psychographic profile is formed by recording computer activity and viewing habits of the end user. Content of categories of interest and display format in each category are revealed by the psychographic profile, based on user viewing of agate information. Using the profile (with or without additional user demographics), advertisements are displayed to appropriately selected users. Based on regression analysis of recorded responses of a first set of users viewing the advertisements, the target user profile is refined. Viewing by and regression analysis of recorded responses of subsequent sets of users continually auto-targets and customizes ads for the optimal end user audience.

The Increased Receptivity to Software Patents



Estimates of Software Patents Issued in the United States



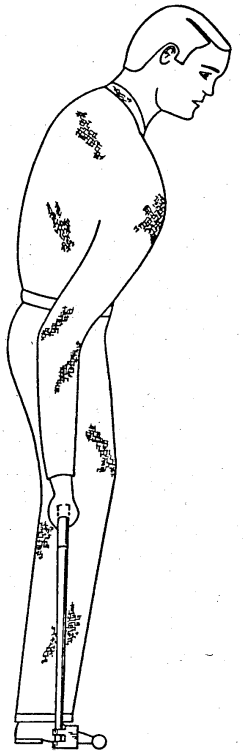
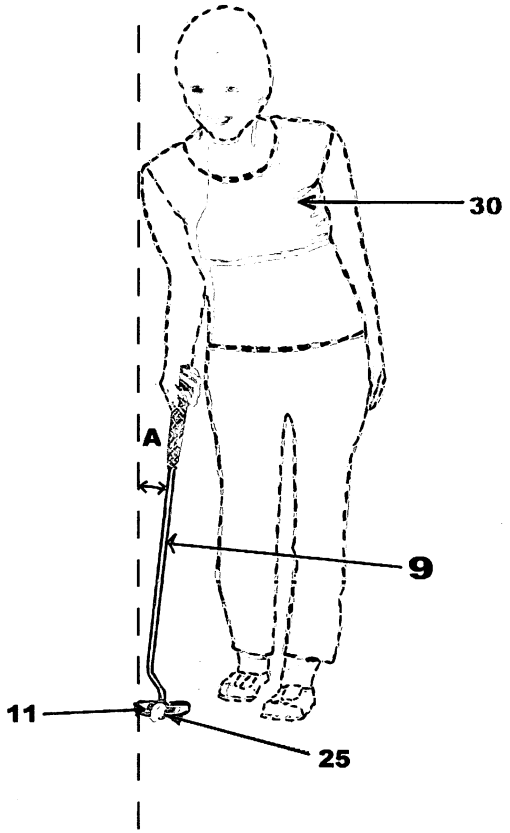
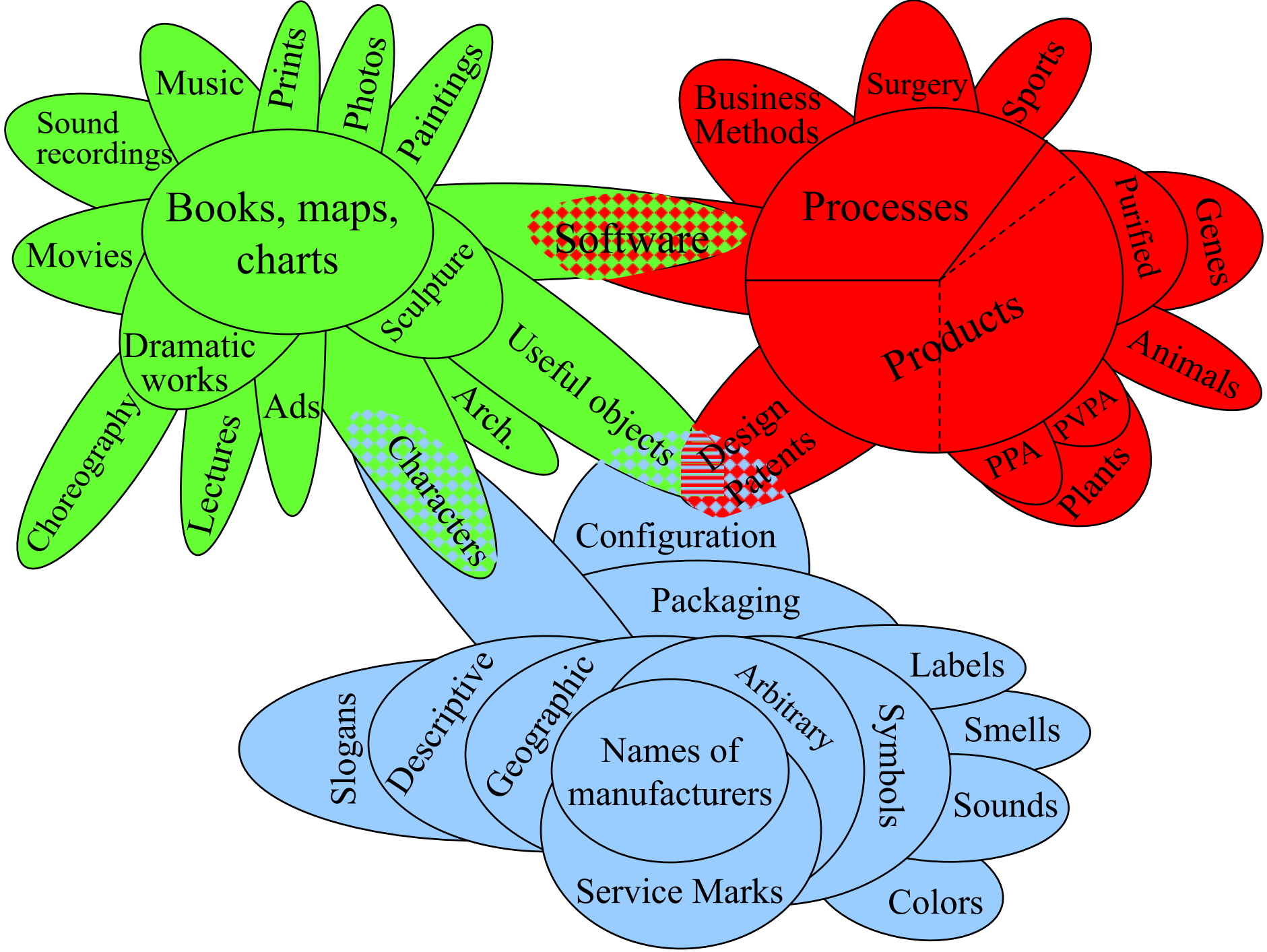


FIG. 4




Books, maps, charts
Music
Prints
Photos
Paintings
Sound recordings
Movies
Dramatic works
Choreography
Lectures
Ads
Sculpture
Arch.
Characters
Useful objects
Software
Processes
Business Methods
Surgery
Sports
Products
Purified
Genes
Animals
Plants
PPA
PVPA
Design Patents
Configuration
Packaging
Labels
Smells
Sounds
Colors
Symbols
Arbitrary
Geographic
Descriptive
Slogans
Names of manufacturers
Service Marks

Potential Explanations for Historical Trends

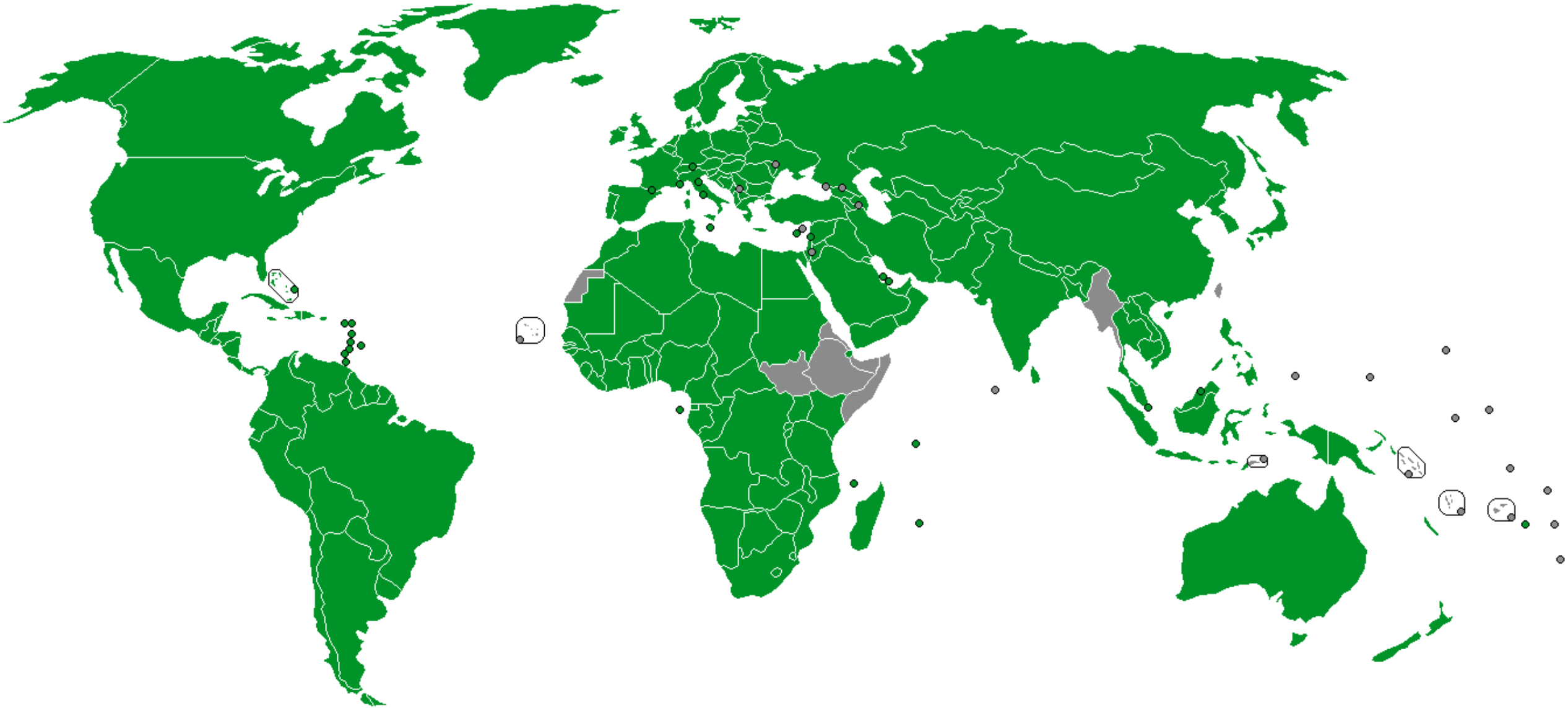
Expansion (1800-2000)

1) Changing Basis of the Economy
   - Agriculture to industry to information processing
2) Political Economy
3) Ideology
   - Labor Theory
   - Classical Liberalism
   - Romantic conception of inventors
   - Frontier Ethic
   - Pastoral Ideal
   - Celebration of Social Mobility
4) ”Propertization”

Contraction (2000-2021)

- Political Economy
- Ideology
  - Nationalism/Mercantilism
  - Intensified concern with public health
  - Reservations concerning hubris and Pandora’s box
  - Environmentalism

Section B: Harmonization



Paris Convention Member States (as of December 15, 2022)

“Gaps” in Patent Protection in the 92 Member Countries of the Paris Union (1988)

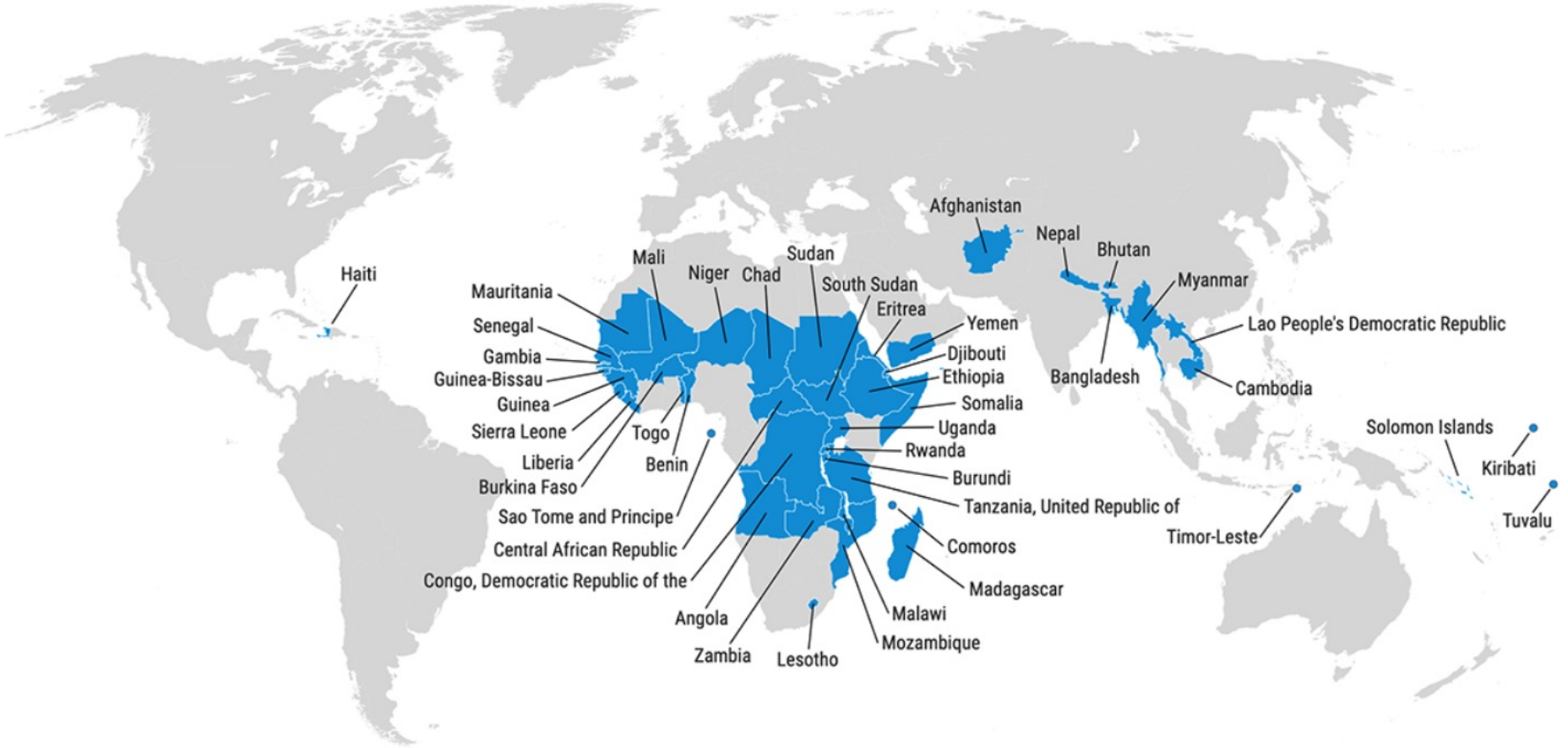
	Countries
Pharmaceutical products	49
Pharmaceutical processes	10
Surgical and diagnostic methods	44
Animals	45
Plants	44
Processes for production of plants & animals	42
Microorganisms	9
Food products	35
Processes for production of food	9
Software	32
Chemical products	22

Source: Joseph Straus, *The Implications of the TRIPS Agreement in the Field of Patent Law*, *in* FROM GATT TO TRIPS (Friedrich-Karl Beier & Gerhard Shricker eds., 1996)

Least Developed Countries (LDCs)

(46 countries)

Africa 33, Asia 9, Caribbean 1, Pacific 3

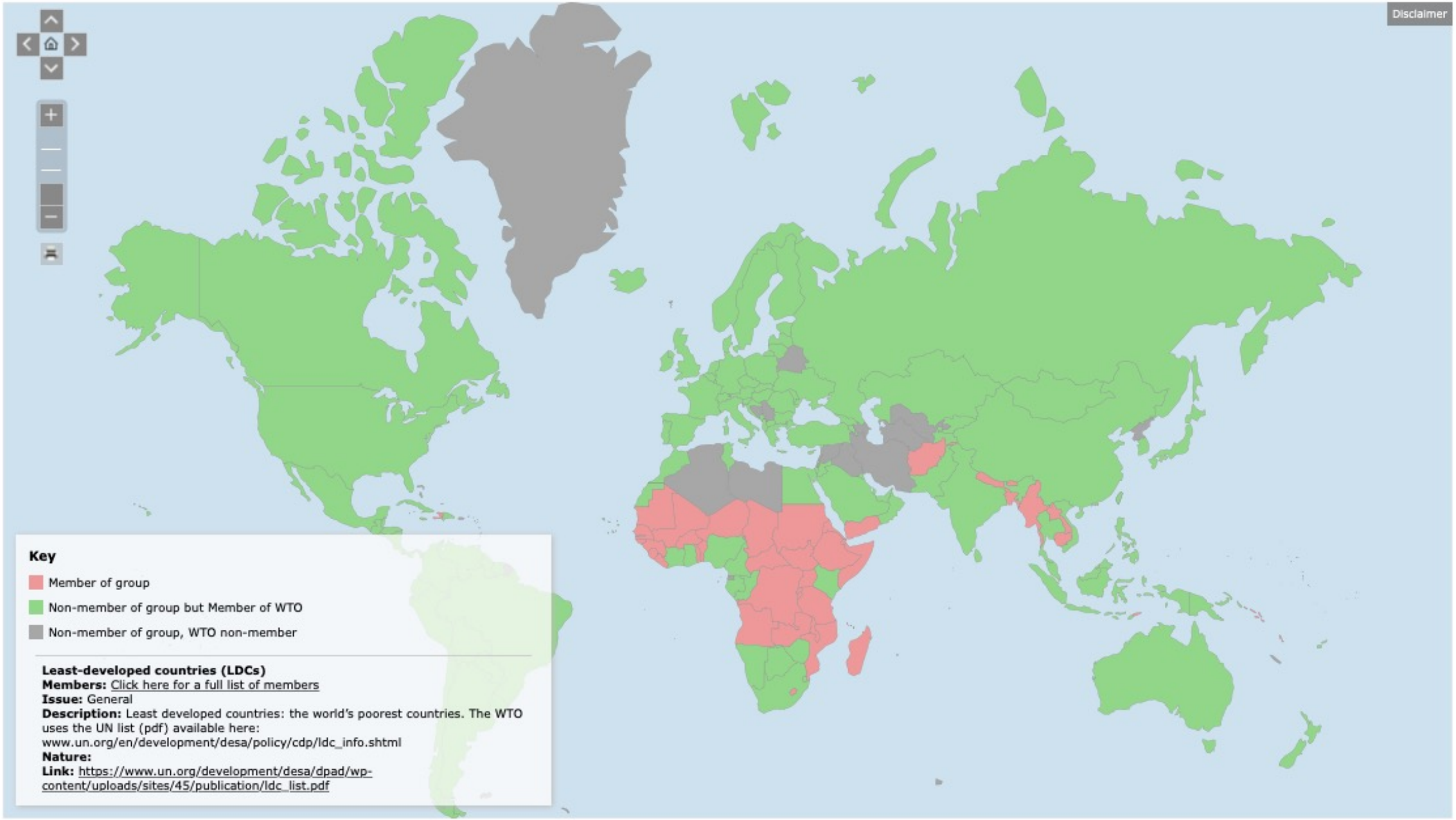


Note: The boundaries and names shown, and the designations used on this map do not imply official endorsement or acceptance by the United Nations

Date: October 2022

Source: https://unctad.org/topic/least-developed-countries/list

Section C: Contraction


Disclaimer
Key
Member of group
Non-member of group but Member of WTO
Non-member of group, WTO non-member
Least-developed countries (LDCs)
Members: Click here for a full list of members
Issue: General
Description: Least developed countries: the world's poorest countries. The WTO uses the UN list (pdf) available here: www.un.org/en/development/desa/policy/cdp/ldc_info.shtml
Nature:
Link: https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf

35 USC 287(c)

- (1). With respect to a medical practitioner's performance of a medical activity that constitutes an infringement under section 271(a) or (b), the provisions of sections 281, 283, 284, and 285 shall not apply against the medical practitioner or against a related health care entity with respect to such medical activity.
- (2)(A) For the purpose of this subsection, the term "medical activity" means the performance of a medical or surgical procedure on a body, but shall not include (i) the use of a patented machine, manufacture, or composition of matter in violation of such patent, (ii) the practice of a patented use of a composition of matter in violation of such patent, or (iii) the practice of a process in violation of a biotechnology patent.

Table 1. Estimated new cancer cases (thousands), ASRs (per 100,000) and cumulative risks to age 75 (percent) by sex and cancer site worldwide, 2012

	Both sexes				Male				Female			
Cancer site	Cases	(%)	ASR (World)	Cum. risk (0–74)	Cases	(%)	ASR (World)	Cum. risk (0–74)	Cases	(%)	ASR (World)	Cum.risk (0–74)
Lip, oral cavity	300	2.1	4.0	0.5	199	2.7	5.5	0.6	101	1.5	2.5	0.3
Nasopharynx	87	0.6	1.2	0.1	61	0.8	1.7	0.2	26	0.4	0.7	0.1
Other pharynx	142	1.0	1.9	0.2	115	1.5	3.2	0.4	27	0.4	0.7	0.1
Oesophagus	456	3.2	5.9	0.7	323	4.3	9.0	1.1	133	2.0	3.1	0.4
Stomach	951	6.8	12.1	1.4	631	8.5	17.4	2.0	320	4.8	7.5	0.8
Colorectum	1360	9.7	17.2	2.0	746	10.0	20.6	2.4	614	9.2	14.3	1.6
Liver	782	5.6	10.1	1.1	554	7.5	15.3	1.7	228	3.4	5.4	0.6
Gallbladder	178	1.3	2.2	0.2	77	1.0	2.1	0.2	101	1.5	2.3	0.3
Pancreas	338	2.4	4.2	0.5	178	2.4	4.9	0.6	160	2.4	3.6	0.4
Larynx	157	1.1	2.1	0.3	138	1.9	3.9	0.5	19	0.3	0.5	0.1
Lung	1825	12.9	23.1	2.7	1242	16.7	34.2	3.9	583	8.7	13.6	1.6
Melanoma of skin	232	1.6	3.0	0.3	121	1.6	3.3	0.4	111	1.7	2.8	0.3
Kaposi sarcoma	44	0.3	0.6	0.1	29	0.4	0.8	0.1	15	0.2	0.4	0.0
Breast	1677	11.9	43.3	4.6					1677	25.2	43.3	4.6
Cervix uteri	528	3.7	14.0	1.4					528	7.9	14.0	1.4
Corpus uteri	320	2.3	8.3	1.0					320	4.8	8.3	1.0
Ovary	239	1.7	6.1	0.7					239	3.6	6.1	0.7
Prostate	1112	7.9	31.1	3.8	1112	15.0	31.1	3.8				
Testis	55	0.4	1.5	0.1	55	0.7	1.5	0.1				
Kidney	338	2.4	4.4	0.5	214	2.9	6.0	0.7	124	1.9	3.1	0.3
Bladder	429	3.1	5.3	0.6	330	4.4	9.0	1.0	99	1.5	2.2	0.2
Brain, nervous system	257	1.8	3.4	0.3	140	1.9	3.9	0.4	117	1.8	3.0	0.3
Thyroid	298	2.1	4.0	0.4	68	0.9	1.9	0.2	230	3.5	6.1	0.6
Hodgkin lymphoma	66	0.5	0.9	0.1	39	0.5	1.1	0.1	27	0.4	0.7	0.1
Non-Hodgkin lymphoma	386	2.7	5.1	0.5	218	2.9	6.0	0.6	168	2.5	4.1	0.4
Multiple myeloma	114	0.8	1.5	0.2	62	0.8	1.7	0.2	52	0.8	1.2	0.2
Leukaemia	352	2.5	4.7	0.4	201	2.7	5.6	0.5	151	2.3	3.9	0.4
All cancers excl. non-melanoma skin cancer	14090	100.0	182.3	18.5	7427	100.0	205.4	21.0	6663	100.0	165.3	16.4

Source: Jacques Ferlay et al., "Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012," International Journal of Cancer 136 (2015): E359-E386

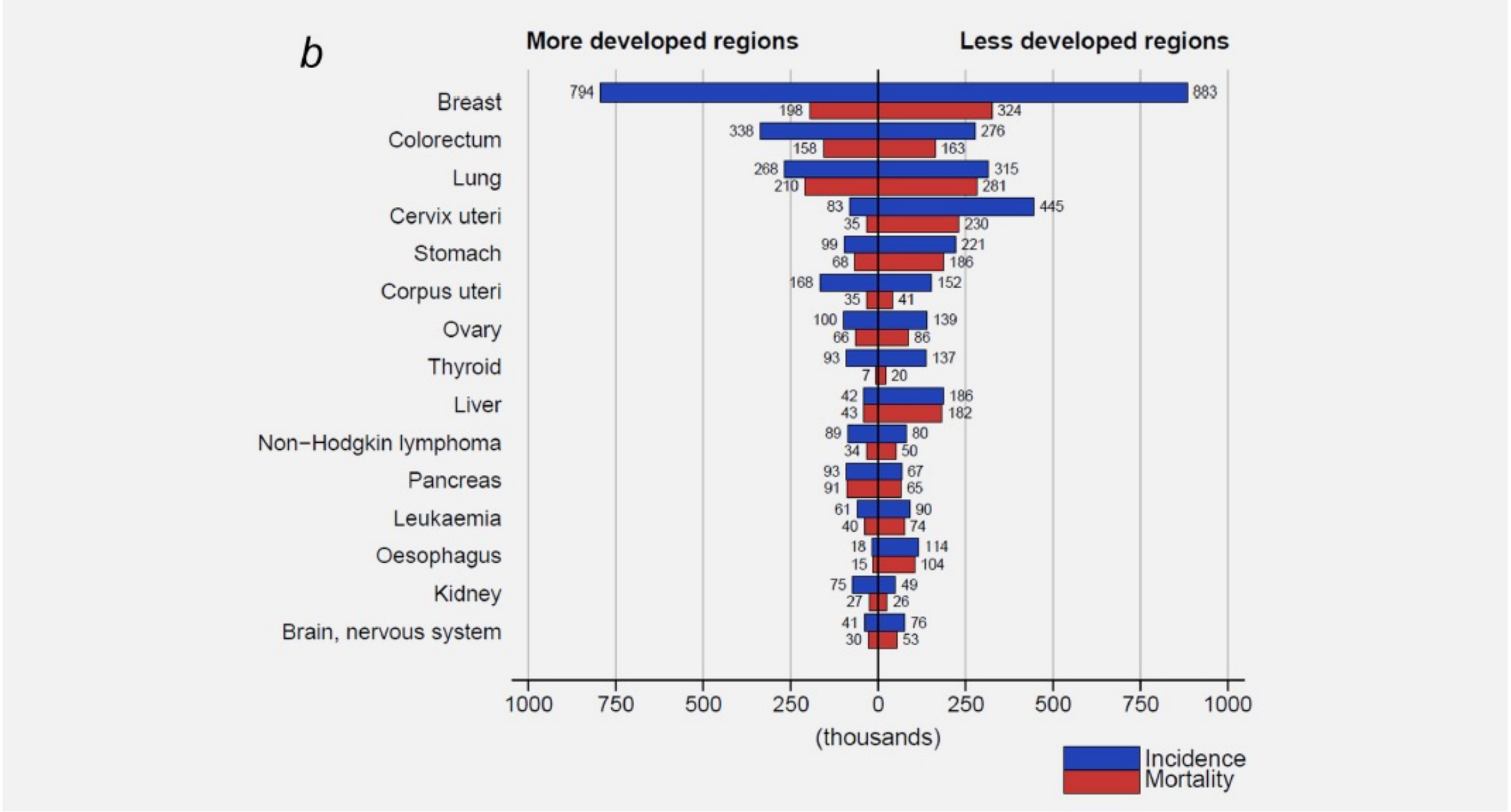
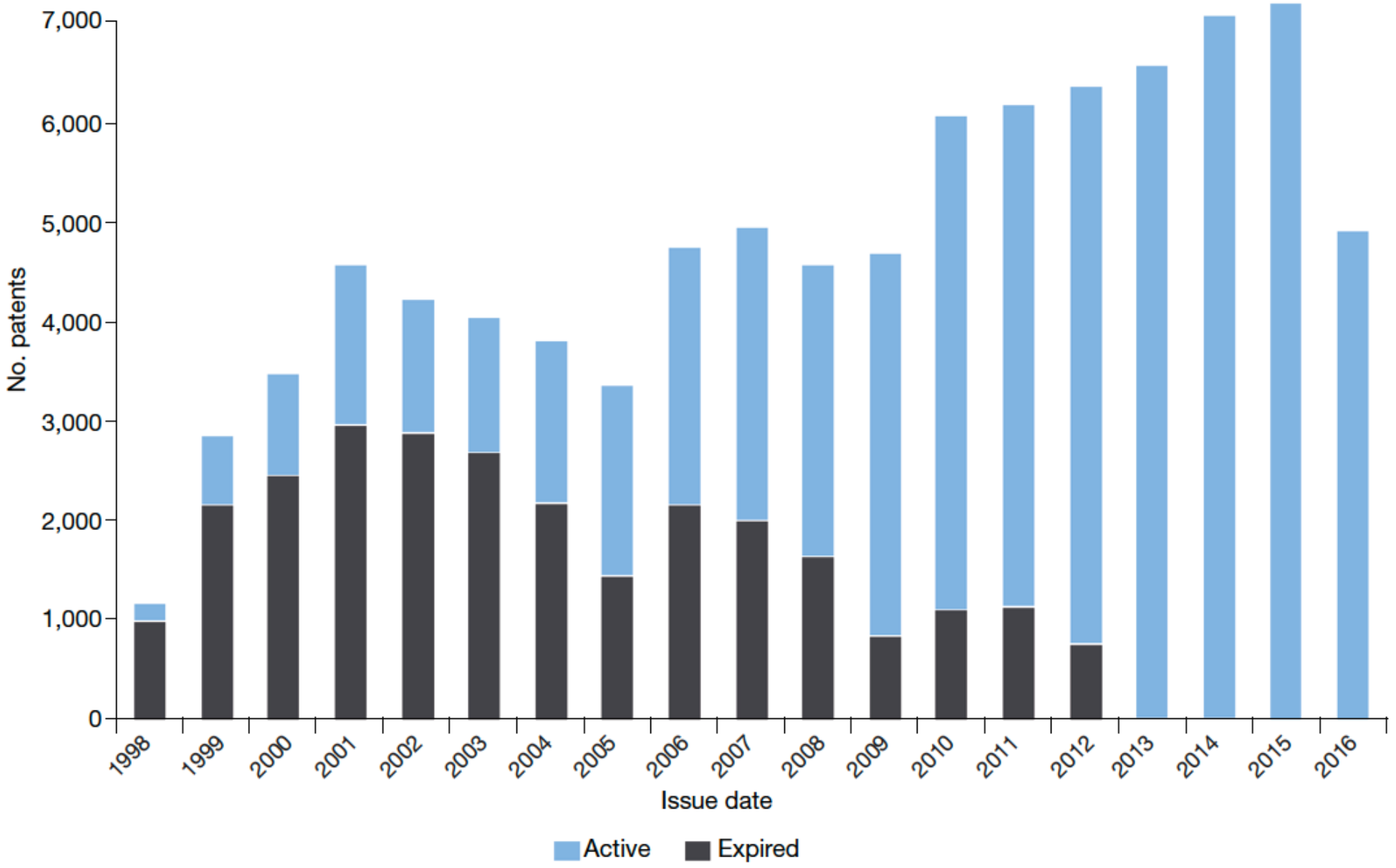


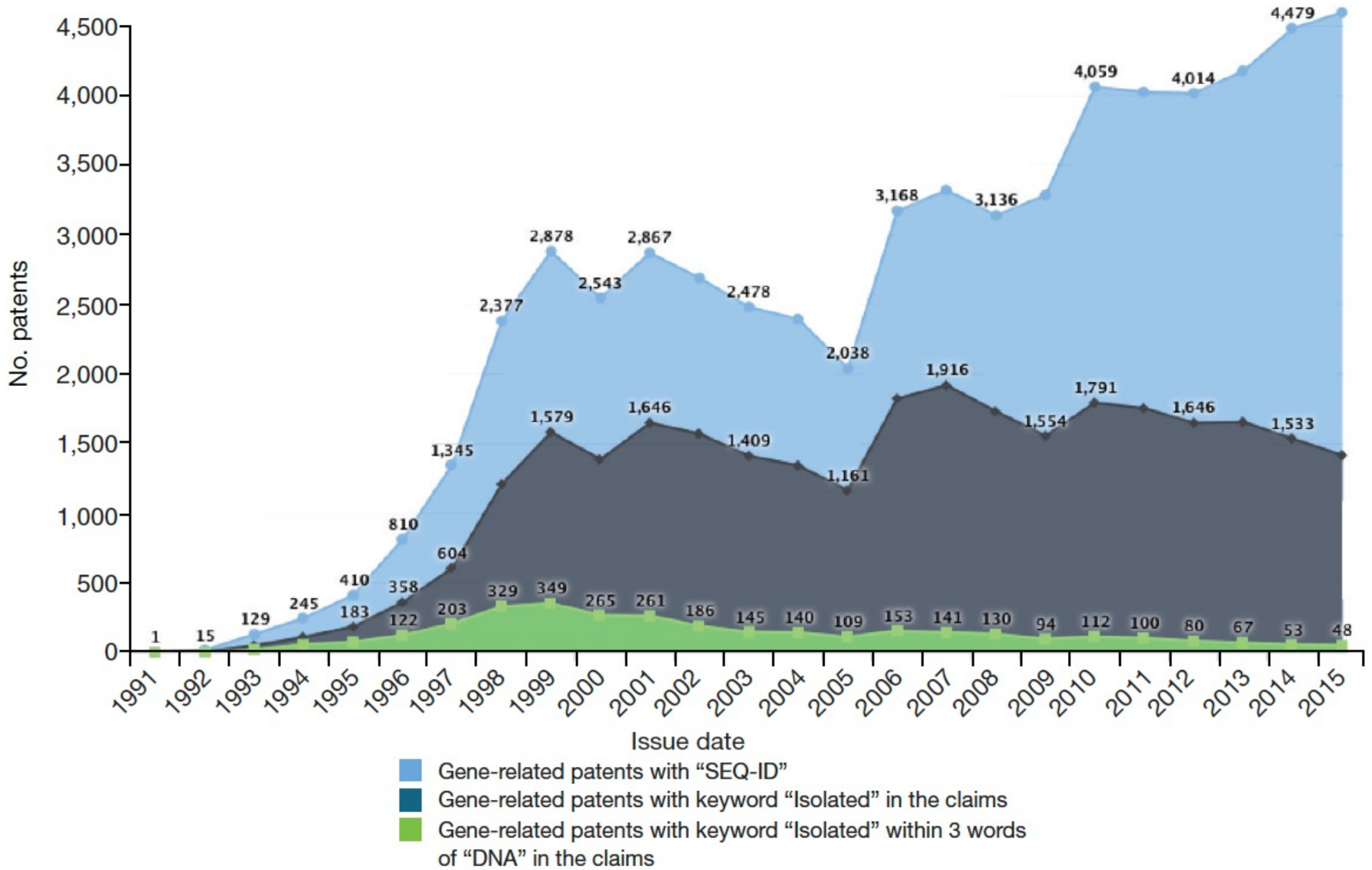
Figure 4. (*a*) Estimated numbers (thousands) of new cancer cases (incidence) and deaths (mortality) in men in more developed and less developed regions of the world in 2012. (*b*) Estimated numbers (thousands) of new cancer cases (incidence) and deaths (mortality) in women in more developed and less developed regions of the world in 2012.

Source: Jacques Ferlay et al., "Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012," International Journal of Cancer 136 (2015): E359-E386

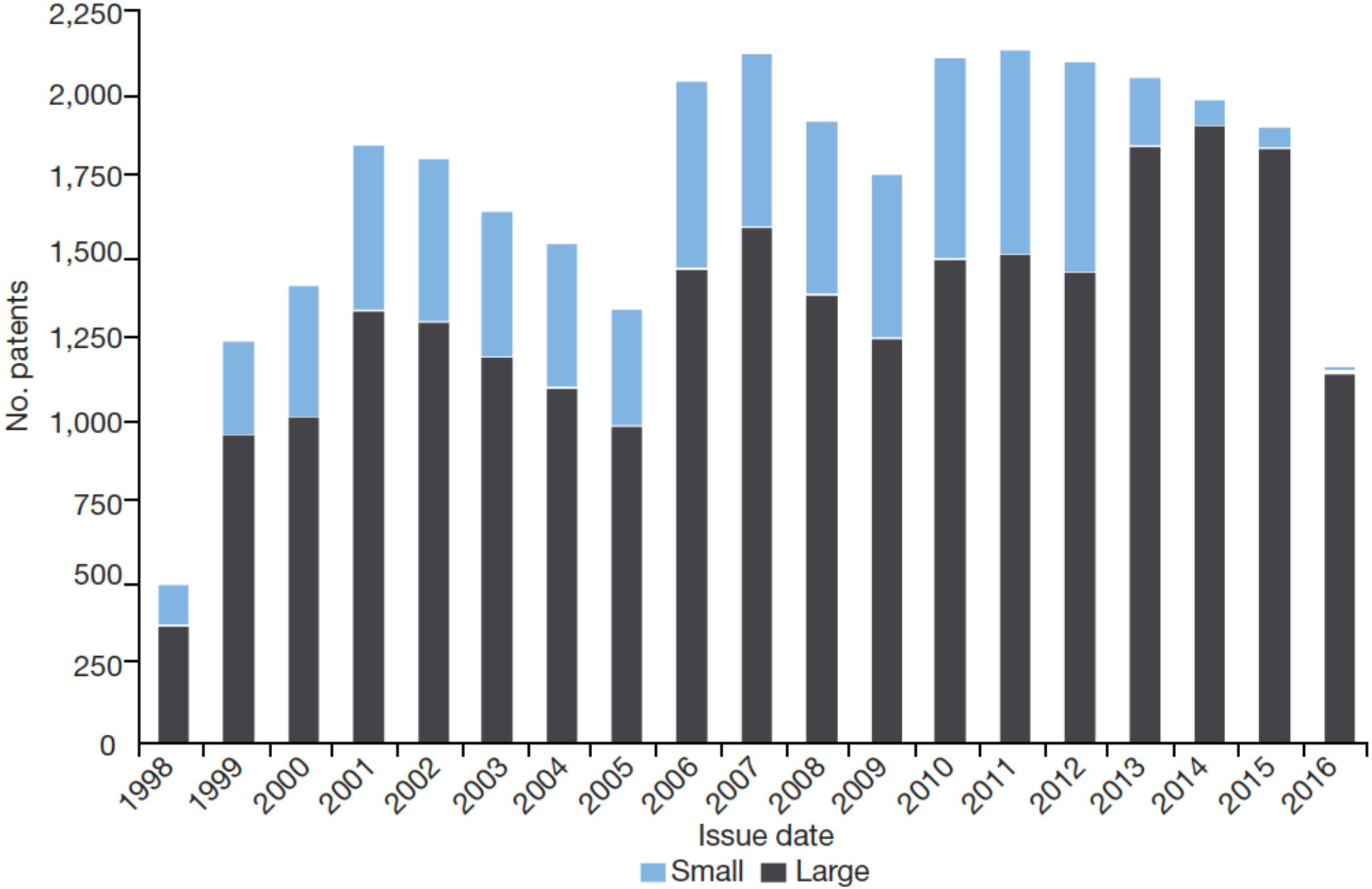


Source: Mateo Aboy, Kathleen Liddell, Johnathon Liddicoat & Cristina Crespo, "Myriad's impact on gene patents," *Nature Biotechnology* 34 (November 2016): 1119

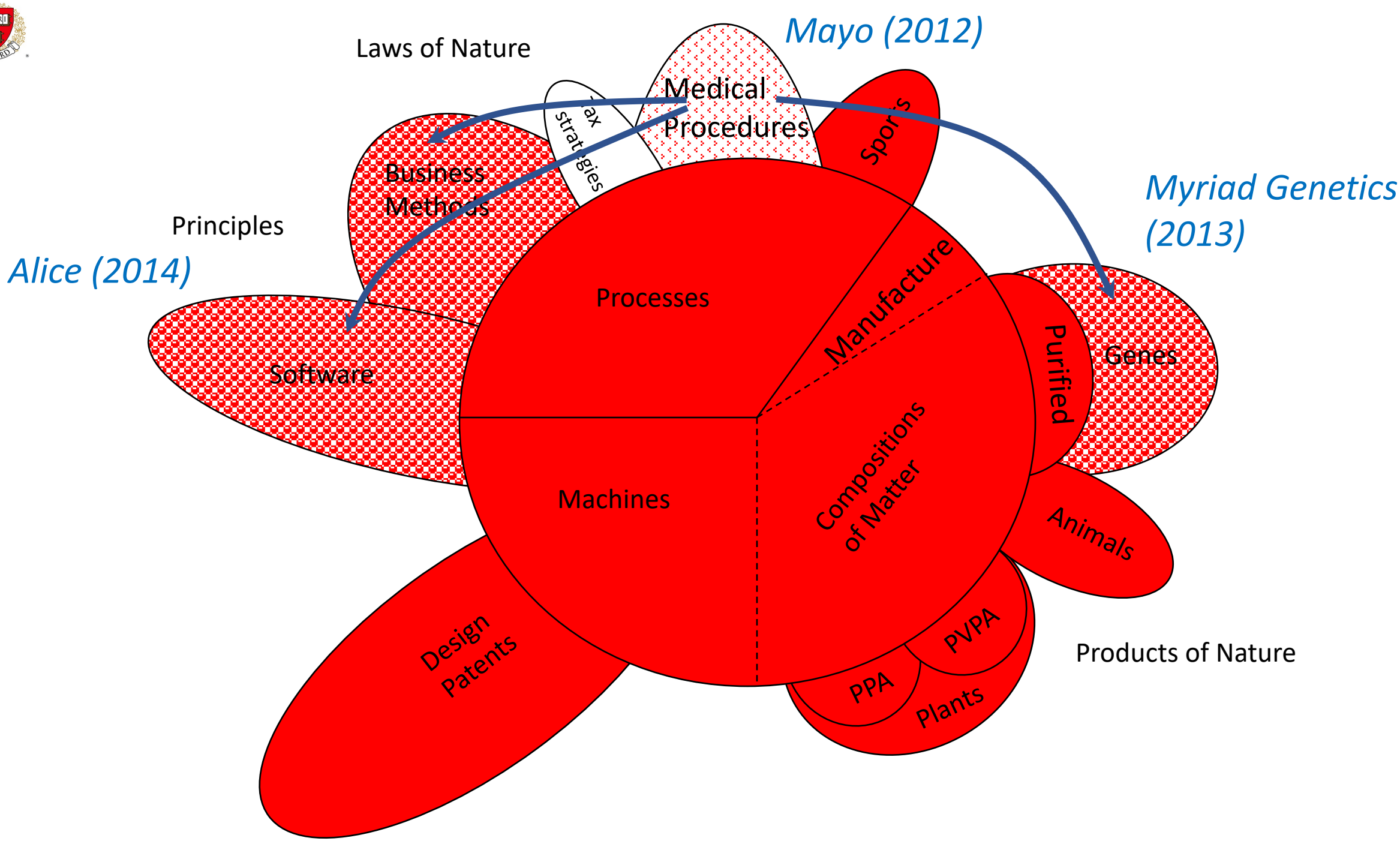
Figure 1 General gene-related patents (defined as any patent containing the S1 search terms in **Table 1**) plotted by their issue date.



Source: Mateo Aboy, Kathleen Liddell, Johnathon Liddicoat & Cristina Crespo, "Myriad's impact on gene patents," *Nature Biotechnology* 34 (November 2016): 1119



Source: Mateo Aboy, Kathleen Liddell, Johnathon Liddicoat & Cristina Crespo, "Myriad's impact on gene patents," *Nature Biotechnology* 34 (November 2016): 1119


Laws of Nature
Mayo (2012)
Medical Procedures
Tax strategies
Business Methods
Sports
Myriad Genetics (2013)
Principles
Alice (2014)
Processes
Manufacture
Purified
Genes
Software
Machines
Compositions of Matter
Animals
Design Patents
PVPA
PPA
Plants
Products of Nature

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