



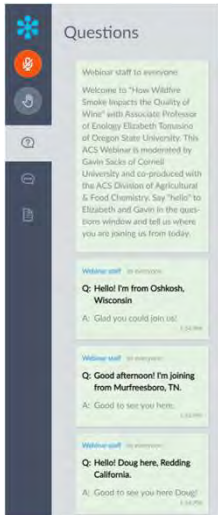
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Questions or Comments?


Type them into the questions box!

“Why am I muted?”
Don't worry. Everyone is muted except the Presenter and the Host. Thank you and enjoy the show.





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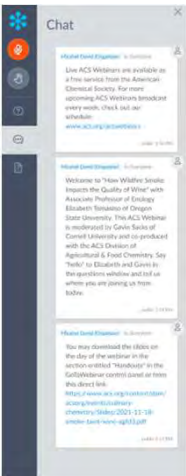


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<https://chemidp.acs.org>

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Career Consultant Directory



- ACS Member-exclusive program that allows you to arrange a one-on-one appointment with a certified ACS Career Consultant.
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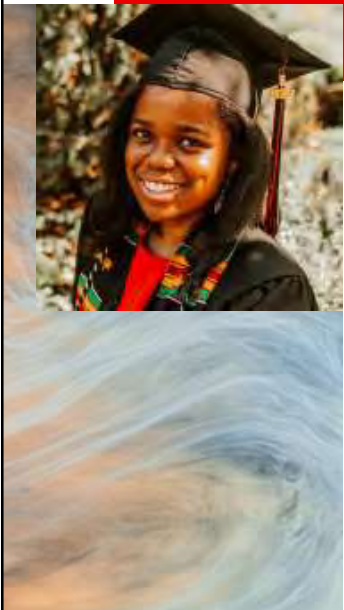
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ACS Scholar Adunoluwa Obisesan

BS, Massachusetts Institute of Technology, June 2021
(Chemical-biological Engineering, Computer Science & Molecular Biology)

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Resources

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<p>ACS Publications DEIR Hub See what ACS Publications is doing for fostering inclusivity in scholarly publishing. →</p>	<p>ACS Volunteer and ACS Meetings Code of Conduct Fostering a positive and welcoming environment for attendees, volunteers and staff. →</p>
<p>C&EN Trailblazers C&EN highlights scientists from different backgrounds who are making an impact in chemistry. →</p>	<p>NEW! Download DEIR Educational Resources Download this educational guide for additional recommendations on videos, articles, books, podcasts, and more on diversity, inclusion, and related topics. →</p>
<p>Quick Guide: Inclusion Moments Learn more about what inclusion Moments are and see ideas to host them during your meetings. →</p>	<p>Quick Guide: How to host inclusive in-person events Recommendations and best practices to ensure that your events can accommodate everyone. →</p>

Diversity, Equity, Inclusion, and Respect

**Adapted from definitions from the Ford Foundation Center for Social Justice:

Equity**

Seeks to ensure fair treatment, equality of opportunity, and fairness in access to information and resources for all. We believe this is only possible in an environment built on respect and dignity. Equity requires the identification and elimination of barriers that have prevented the full participation of some groups.

Diversity**

The representation of varied identities and differences (race, ethnicity, gender, disability, sexual orientation, gender identity, national origin, tribe, caste, socio-economic status, thinking and communication styles, etc.), collectively and as individuals. ACS seeks to proactively engage, understand, and draw on a variety of perspectives.

Inclusion**

Builds a culture of belonging by actively inviting the contribution and participation of all people. Every person's voice adds value, and ACS strives to create balance in the face of power differences. In addition, no one person can or should be called upon to represent an entire community.

Respect

Ensures that each person is treated with professionalism, integrity, and ethics underpinning all interpersonal interactions.

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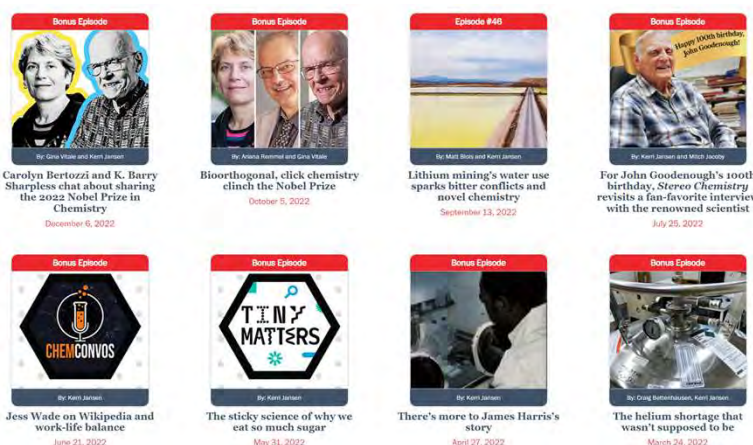
Sam Jones, PhD
Science Writer & Exec Producer

Deboki Chakravarti, PhD
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December 6, 2022

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October 5, 2022

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September 13, 2022

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Personal Career Consultations



Jim Tung
Marketing
Lumicon Laboratories
U.S. Biochemistry, University of Oregon
Ph.D., Organic Chemistry, University of Texas at Austin


Jim Tung works at Lumicon Laboratories in Portland, OR, currently as a business development manager. He has been with Lumicon for 10 years, working on developing new chemical manufacturing projects. Before that, he was a senior research chemist at Orlon Research in Chesham, IL, performing kilo-scale organic chemistry.

An Oregon native, Jim got his B.S. in biochemistry from the University of Oregon, his Ph.D. in organic chemistry from the University of Notre Dame, with postdoctoral experience at Fluor's laboratories in La Jolla, CA. He is past chair of the Portland Section of the American Chemical Society and was 2019 general co-chair of NCRM 2016. He has interests in process chemistry, labor economics, social media outreach and encouraging career exploration and development for younger chemists.

Ask me about:
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Thursday, July 27, 2023 | 2-3:15pm ET

**The Art of Securing Research Funding:
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Co-produced with ACS Office of Research Grants and the
ACS Petroleum Research Fund



Wednesday, August 2, 2023 | 2-3pm ET

**Fundamentals of Intellectual
Property for Scientists**

Co-produced with ACS Committee on Science



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More recently our programming has delved into forensics.

<https://www.chemistryandthelaw.org>

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WILL BEGIN SHORTLY...**

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Fundamentals of Intellectual Property for Scientists



EDGARDO MANTILLA, PhD, JD
IP Counsel, Thermo Fisher Scientific





KATHERINE RUBINO, PharmD, JD
Partner & Chair, Life Sciences Practice Group, Caldwell Law


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Audience Survey Question

ANSWER THE QUESTION ON THE INTERACTIVE SCREEN IN ONE MOMENT


How familiar are you with the various forms of intellectual property?

- What is intellectual property? (Novice)
- Somewhat familiar, but could not define them all
- Very familiar, I could define most of them
- I am an IP lawyer (Expert)

*** If your answer differs greatly from the choices above tell us in the questions window!**

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**CHEMISTRY
AND THE LAW**
A DIVISION OF THE AMERICAN CHEMICAL SOCIETY

IP Mechanics & Value of IP In Chemistry

Edgardo J. Mantilla, Ph.D.
IP Counsel
Thermo Fisher Scientific


Katherine A. Rubino, Pharm.D.
Partner and Chair, Life Sciences Practice
CALDWELL Law

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Disclaimer

This presentation is for educational purposes only. No part of this presentation should be considered legal advice. Participants should consult an intellectual property attorney for any specific questions. The materials presented here do not represent the views of either Thermo Fisher Scientific or Caldwell Law.



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Goals



Teach fundamental principles of intellectual property



Help participants develop a comfort level when discussing intellectual property topics



Raise awareness of how to use IP to derive revenue

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Agenda

Part I. Discussions of Various Forms of IP

- Patents
- Trade Secrets
- Trademarks
- Copyrights

Part II. Monetizing Intellectual Property

- Basics on Monetization
- Licensing & Partnerships
- Value Creation for Initial Public Offering (IPO)
- Patents to Secure Fundraising

Q and A

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Audience Survey Question

ANSWER THE QUESTION ON THE INTERACTIVE SCREEN IN ONE MOMENT

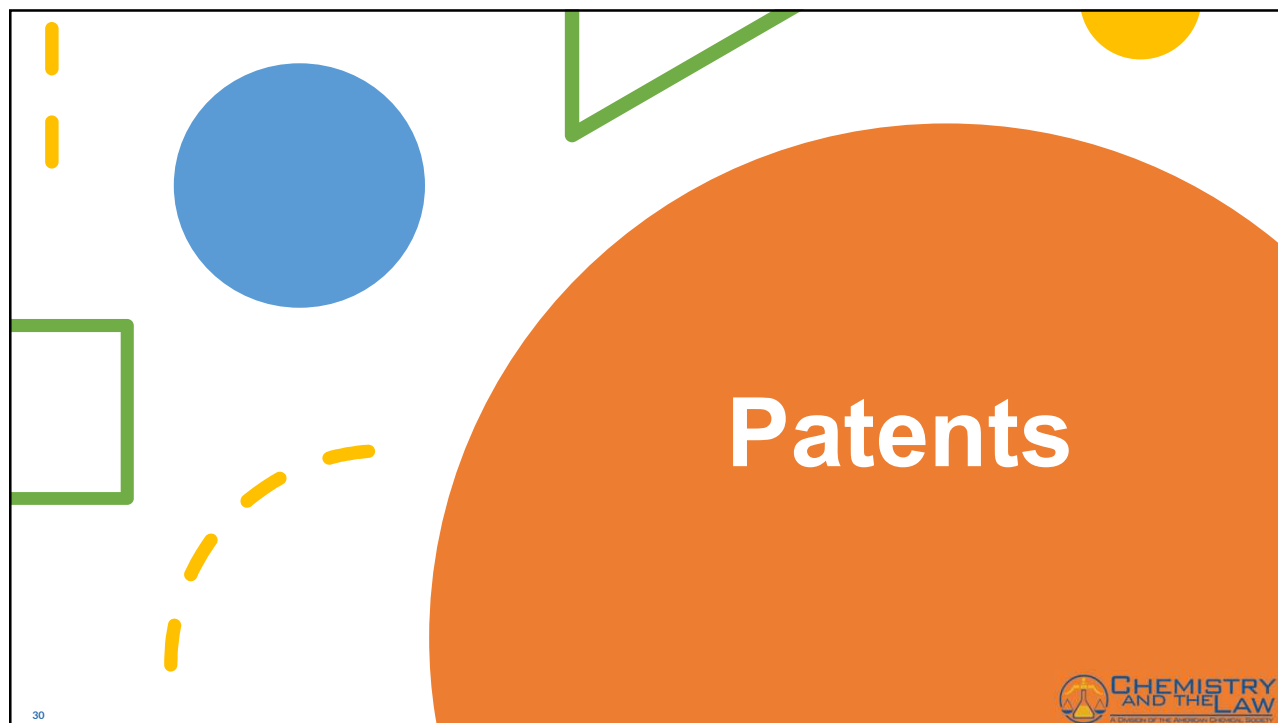
What is your main reason for attending today's presentation? (Select all that apply)

- General interest in the subject
- I have a potential invention and are interested in learning potential next steps
- Interested in monetizing my current IP
- Other (Let us know in the questions window)

* If your answer is "Other" tell us more in the questions window!

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What is Intellectual Property?

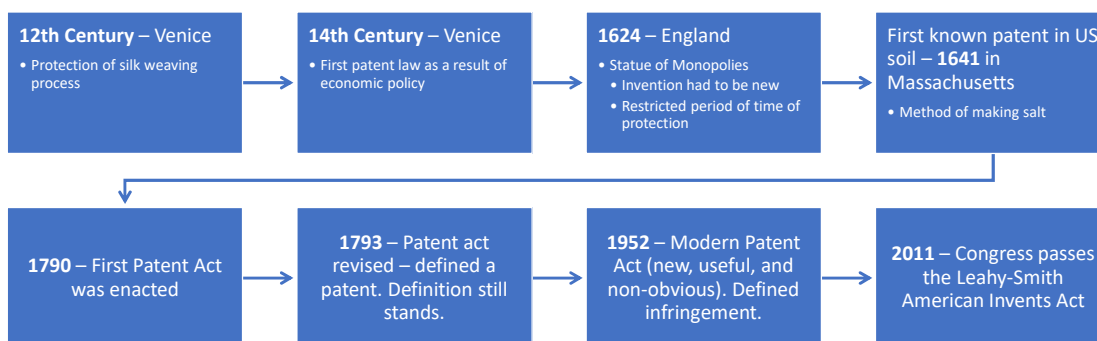
- IP refers to products of the mind that the law protects



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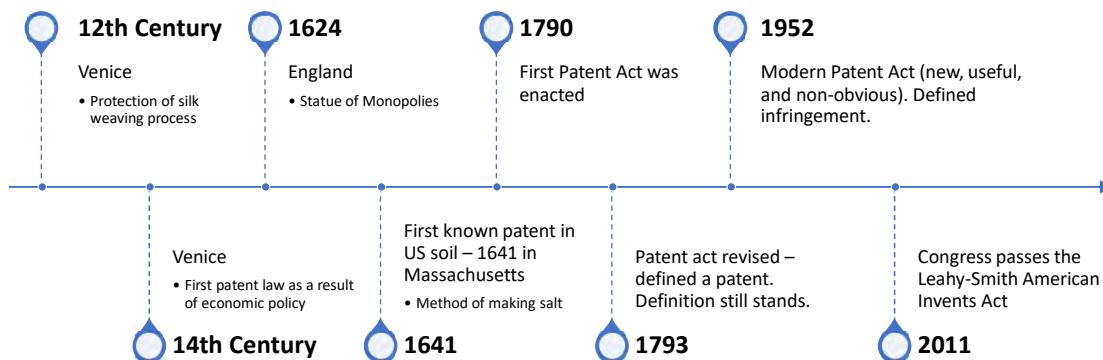
Patents – Brief History



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Patents – Brief History



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What is a Patent?

- Time-limited right to **exclude** others from practicing an invention in exchange for a public disclosure of how to practice the invention.
 - Translation: a contract between you and the government.
- Types of Patents
 - Utility (most common)
 - Design
 - Plant
- Definition of “Time-Limited”
 - For utility and plant patents = 20 years **from time of filing**
 - Design patents = 15 years **from date of grant**



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Patents and the US Constitution

- **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;*




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Requirements to obtain a patent

Requirement	Description	Pertinent Statute
Utility	Must be useful	35 U.S.C 101
Novelty	Not done before	35 U.S.C 102
Nonobviousness	Not a combination of references; not obvious to “one of ordinary skill in the art.”	35 U.S.C 103

Must be within a statutory categories
– covered next



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Statutory Categories


Process = method of doing something

Machine = something w/ moving parts

Manufacture = create something new from pre-existing raw materials


Composition of matter = overlaps with manufacture

Improvement of above categories




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Property Rights Provided by a Patent

- Right to exclude/prohibit others from *making, using, offering for sale, selling or importing* invention
 - Negative Monopoly
- Rights generally limited to U.S.



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Does a single patent offer protection worldwide?

- No – patents are territorial. Inventions need to be patented in each individual country.
- Aids to this process
 - Patent Cooperation Treaty (PCT)
 - Patent Prosecution Highway (PPH)

It is strongly recommended that you work with a patent attorney or tech transfer office who will help formulate a filing strategy.



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Origins of Patent Law



United States Constitution 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;

Congress writes/updates patent laws

35 USC – 4 parts

Part I – United States Patent and Trademark Office

Part II - Patentability of Inventions and Grant of Patents

Part III - Patents and Protection of Patent Rights

Part IV – Patent Cooperation Treaty



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From Laws to Rules....



United States Patent and Trademark Office interprets the law and writes its rules.

37 CFR - 4 Chapters each consisting of 100 parts



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The Inventive Steps in the US

- Two steps to every invention
 - Step 1 – Conception: the Aha! Moment
 - Step 2 – Reduction to Practice
 - Actual – build a prototype
 - Constructive – file a patent
- There is no need to have an actual physical product to file a patent.
- The person(s) that completes the conception step is called the “inventor.”
- Anyone can then reduce it to practice. However, they cannot be inventors unless they helped to conceive the idea.

Quiz

Person E comes up with formula to cure common cold: $x + y \rightarrow j$

Person E works with Person H and go to the lab and come up with product j.

Who is the inventor?

- Person E and Person H
- Person E alone
- Person H alone
- Wile E. Coyote, Super genius



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Types of Patent Applications

Provisional

- Does not get examined
- Gets a filing date – establishes priority
- At its 1-year anniversary, it becomes abandoned
- First-in-Family application

Non-Provisional

- Full Utility Application
- Will claim the benefit from the provisional application
- Application will receive examination by a patent examiner

Continuation Application

- A later application carved out of a pending utility application (parent)



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Parts of a Utility Application

- At least one claim
 - Claims set up the “metes and bounds” of your invention
 - The most important part of the invention
- Specification
- Drawings
- Oath or Declaration
- Fees



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- Claims usually begin with “What is claimed is”; “I claim”; “We claim”
- Two types
 - Independent

*“1. A method of manufacturing a chair, comprising:
providing a flexible rectangular seat;
providing two arms;
...”*
 - Dependent

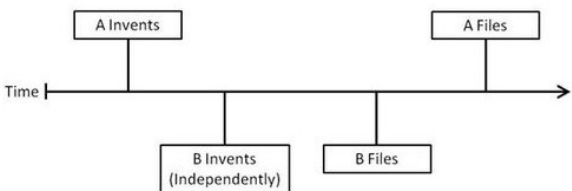
*“2. A method of manufacturing a chair **as described in claim 1**, wherein set arms are attached to said flexible rectangular seat by using wood glue.*
- Basic filing fee entitles the inventor to submit a total of 20 claims; 3 of them can be independent.
 - A surcharge is incurred if additional claims are submitted.



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First Inventor to File (FITF)

- US is a First-Inventor-to-File country
- Will resemble most of the world



The diagram shows a horizontal timeline arrow pointing to the right. Above the arrow, from left to right, are boxes for 'A Invents' and 'A Files'. Below the arrow, from left to right, are boxes for 'B Invents (Independently)' and 'B Files'. Vertical lines connect each box to the timeline arrow.

Who may get the patent? Inventor B even though Inventor A conceived the invention.



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Sources of Prior Art

(i.e., what may be cited against your application?)

- A product available for sale
- Commercial use of the invention
- Articles, publications, journals, (printed or electronic), published patent applications (in prosecution or abandoned, anywhere in the world)
- Presentation at a conference, trade show
- Public knowledge or use of the invention



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How to Obtain a Patent

[Link to Process in USPTO Website](#)

General comments

- **Time consuming**
 - There are ways to expedite the process, but they are costly.
- **Expensive**
 - Patent Professional Fees
 - Government fees
- **Can get lost in the process**
 - Hire a Patent Professional



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Reasons to Obtain a Patent


- Encourages innovation
- A potential source of revenue
 - Licenses
 - Sale
- Personal satisfaction



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Trade Secrets



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Definition of a Trade Secret

Definition of “trade secret,” Restatement of Torts, Section 757, comment b.

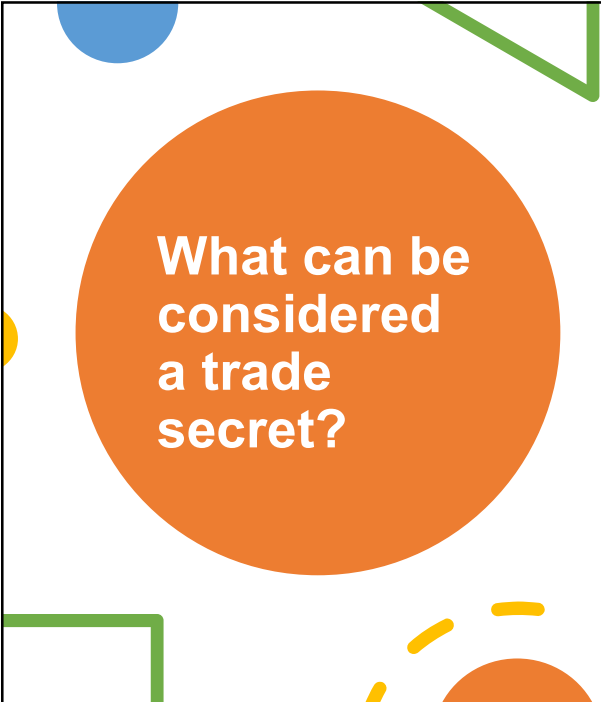
*A trade secret may consist of any formula, pattern, device or compilation of information **which is used** in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it....*

It must be a secret; plans must be in place in order to protect the secret from disclosure.

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What can be considered a trade secret?

- **Few examples**
 - Business ideas
 - Compositions and recipes
 - Unpatentable processes
 - Algorithm and formulas

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Trade Secret Program

- Employment Agreements
- Invention Disclosures
- Non-compete agreements
- Non-disclosure agreements (NDA) with third parties

There are no formalities (i.e., an application) to keep something a trade secret.



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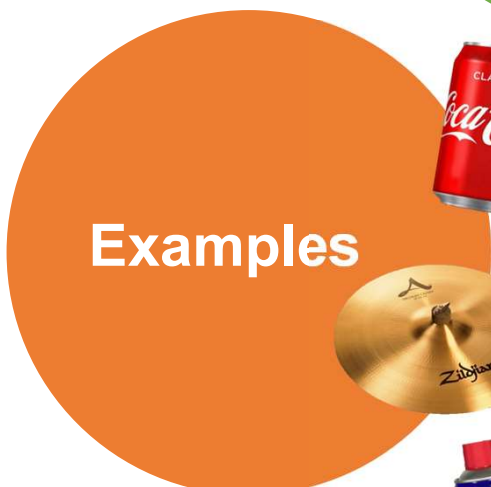
Destroying Trade Secrets

- Inadvertent, by being careless with information that is shared with customers, potential customers, investors, and contractors/vendors
- Intentional by the owner, by speaking to third parties, publishing the information in a paper or poster, by selling a product from which the secret can be reverse engineered, applying for a patent (when the application is published) or by submitting the information to the Copyright Office as part of the deposit materials
- Intentional misappropriation by others




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- **Formula for Coca-Cola**
 - Two executives have access to the vault where the formula is kept
 - Extremely well protected
 - Syrup is sold to franchises
- **Zildjian Cymbals** (Norwell, MA)
 - Method of making cymbals has been a secret since 1623.
- **WD40**

Should you patent or keep your invention a trade secret?



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- Trade Secrets are governed by both state and federal law
- All states and the District of Columbia have modeled their trade secret laws on the Uniform Trade Secret Act (“UTSA”). New York relies on common law.
 - New York Assembly has filed a bill to create the UTSA.
- The Defend Trade Secret Act
 - Adopted in 2016
 - Provides a framework for trade secret owners to file civil complaints in a US district court.



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Trademarks

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Trademarks

- **Federal regulation from Article 1, Section 8, Clause 3 of the Constitution.**

Congress shall have the power to:
regulate Commerce with foreign nations, and among the several states, and with the Indian Tribes.

- **15 USC § 1127 (Lanham Act § 47):**
Trademark. The term “trademark” includes any word, name, symbol, or device, or any combination thereof ... to identify and distinguish ... goods, including a unique product, from those manufactured or sold by others and to indicate the source of goods, even if that source is unknown.

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Trademark Concepts

- **Must be:**

- Used in commerce – cannot have a personal trademark
- Distinct – associates goods with the producer.



Word Mark
Goods and Services
Mark Drawing Code
Design Search Code

STARBUCKS COFFEE
© 2013 Starbucks Coffee Company, Seattle, WA. FIRST USE: 1992/0000 FIRST USE IN COMMERCE: 1992/0000
1) DESIGN PLUS WORDS, LETTERS AND/OR NUMBERS
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89/01/02 (Starbucks Siren)
89/01/03 (Starbucks Siren)
89/01/04 (Starbucks Siren)
89/01/05 (Starbucks Siren)
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89/01/18 (Starbucks Siren)
89/01/19 (Starbucks Siren)
89/01/20 (Starbucks Siren)


From the Trademark Electronic
Search System (TESS)

- Unlike patents, trademark must be in use.
 - Between 5th and 6th year after registration– Section 8 (Declaration of Continued Use)
 - Between 9th and 10th year after registration – same section 8 declaration AND application for renewal. This is done between 9th and 10th year thereafter.




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Trademark Symbols

- ® = **used for federally-registered marks.**
 - Can collect damages from infringers
 - Can use the phrase, “[Your Mark] is a registered trademark of [Name or company].”
- ™ = **unregistered mark**
 - Claim ownership
 - No statutory legal benefit




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Common Law Trademarks

- **Trademarks do not have to be registered to be valid**
 - Trademark rights can be developed through use
 - Not governed by statute
 - These rights are governed by state law
- **Common law trademark rights are restricted to a geographical area.**
 - New England Eyeopener blend™ (New England Coffee Company)
 - Would infringement occur if the is a similar blend been sold in Texas?
 - Assuming the seller in Texas had no idea about the existence of the blend in New England – Probably NO.
- **What happens when you search for a common law trademark?**
 - Unlikely that it will be found as it is not registered at the USPTO.
 - The law says that a search has to be attempted.



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Generic Trademarks

Generic terms are common words or terms, often found in the dictionary, that identify products and services and are not specific to any particular source.

So Google Is No Brand X, but What Is 'Genericide'?

Saturday, August 5, 2006

Last month, we noted that "google" had entered Merriam-Webster's Collegiate Dictionary. It was a landmark for the search engine -- going from nonentity to common usage in only eight years. One would think that a company that existed only in the minds of two college dudes a few years ago would be happy that a major publication such as The Washington Post prominently marked the occasion.

One would, that is, until one got a letter from Google's trademark lawyer.

Google, evidently, took offense to this passage in last month's article: "Google, the word, now takes its place alongside the handful of proper nouns that have moved beyond a particular product to become descriptors of an entire sector -- generic trademarks."

This characterization of Google, the letter warned, is "genericide" and should be avoided. Such letters are cranked out every day by companies keen on protecting their trademarks. Wham-O Inc. wants writers to eschew "Frisbee" for "plastic flying disc," for instance. I'll note that in my Palm. Excuse me -- my "personal digital assistant."

Google, however, goes the extra mile and provides a helpful list of appropriate and inappropriate uses of its name. To show how hip and down with the kids Google is, the company gets a little wacky with its examples. Here's one:

"Appropriate: He ego-surfs on the Google search engine to see if he's listed in the results.

Inappropriate: He googles himself."

But this one's our favorite:

"Appropriate: I ran a Google search to check out that guy from the party.

Inappropriate: I googled that hottie."

It's a matter of debate whether it's appropriate or inappropriate for a market-leading company worth \$113 billion to use the word "hottie" in official correspondence. What is beyond debate is the eye-popping fact that Google's trademark complaint arrived via a *hand-addressed letter* in the *actual mail*.

Wonder if they Google(TM)-d me to get the address.



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When you use "Xerox" the way you use "aspirin," we get a headache.
There's a new way to look at it.

Boy, what a headache! And all because some of you may be using our name in a generic manner. Which could cause it to lose its trademark status the way the name "aspirin" did years ago. So when you do use our name, please use it as an adjective to identify our products and services, e.g., Xerox copiers. Never as a verb: "to Xerox" in place of "to copy," or as a noun: "Xeroxes" in place of "copies." Thank you. Now, could you excuse us, we've got to lie down for a few minutes.

XEROX.

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Copyrights

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Copyrights

- **What does a copyright grant its owner?**

- Right to make copies
- Exclusive rights to:
 - Distribute copies
 - Adapt work
 - Make derivatives
 - Annotate version
 - Perform work in public
- Display the work

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What does a Copyright Cover?


- Literary works – any work made of numbers, letters, or symbols
- Source code
- Dramatic works – performed in character
- Pantomime and choreograph works
- Pictorial, graphical, or sculpture
- Movies
- Sound recordings
- Architectural works
- Derivative works
- Compilations

Does not protect the idea; only the work



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Copyright Term

70 years after the death of author.

If a work of corporate authorship, 95 years from publication or 120 years from creation, whichever expires first.

(Copyright Term Extension Act, 1998)




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International Works

- **Seek copyright protection in each country where protection is sought**
 - International conventions or treaties provide mutual recognition and protection.
- **Berne Convention**
 - Adopted in 1886
 - US signed it in 1988; adopted in 1989
 - National treatment – country extends the same protection to foreigners that it gives its own authors.
 - Relaxed Standards on the formalities of copyright
 - No need to include the “©” + year of publication + Name




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Copyrights in the Digital Age

- **Distribution of copyrighted material without appropriate permission can be a violation of federal law.**
 - Digital Millennium Copyright Act (DMCA)
- **Music, movies, video, and games downloaded via file sharing networks without the permission of the copyright owner is illegal.**
 - Highly enforced
 - Huge fines



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Registration of Copyrights

- In general, not required.
- If registered AND copyright is infringed:
 - Receive statutory damages (\$750-30,000)
 - Raised to a maximum of \$150,000 if willful infringement
 - Recover attorney's fees

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Fair Use Doctrine

- **Section 107 of Copyright Act**
- **Reproduction in copies or any other means for purposes of:**
 - Criticism
 - Comment
 - News Reporting
 - Teaching
 - Scholarship
 - Research
- **Determination of Fair Use**
 - Nature of work
 - Amount copied
 - Purpose
 - Effect on market

To be safe, always seek permission!

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Part II. Monetizing Intellectual Property



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Legal Notice

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Basics on Monetization

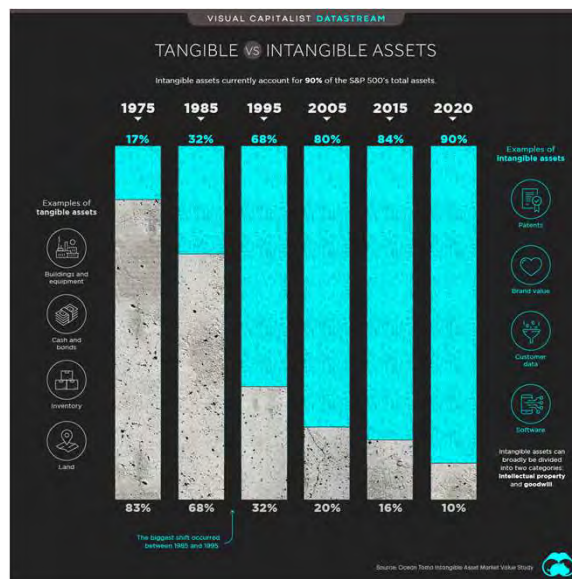


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Intellectual Property: A Changed Landscape

- This is huge!
- The value of S&P 500 companies is in its intangible assets



<https://www.visualcapitalist.com/the-soaring-value-of-intangible-assets-in-the-sp-500/>



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Ways to Monetize Patents

- Licensing
- Enforcement
- Sale
- IP Backed Lending
- Collaborations
- Create value for initial public offering (IPO)



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Patent Valuation

Brokered Asking Prices for Patent Assets in 2020

Asking Price	Per Patent Application Asset	Per U.S. Issued Patent	Per Patent Family
Average	\$178,000	\$302,000	\$418,000
Median	\$120,000	\$250,000	\$325,000
Minimum	\$25,000	\$33,000	\$75,000
Maximum	\$700,000	\$1,138,000	\$3,500,000

Richardson Oliver Insights, Brokered Patent Market Report 2020



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Licensing & Partnerships




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Long Lasting Partnerships

- New emerging trend in the creation of long-term strategic partnerships between start-ups and big pharma
- These deals can look like:
 - Initial deal is struck to work together on an unresolved problem
 - Deeper, longer-lasting partnerships
 - Starting early where pre-commercial assets are now attracting deals



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Noteworthy Collaborations

- Pfizer struck a \$1.35 billion collaboration with CRISPR based editing innovation Beam Therapeutics
- Pfizer struck an agreement with Acuitas Therapeutics to use its lipid nanoparticle delivery system in mRNA vaccines and therapies
- Moderna agreed to pay \$45 million upfront for a license to use Carism Therapeutics' CAR-M technology for the development and commercialization of 12 oncology targets
- Bristol Myers Squibb committed \$3 billion for a licensing and development deal based on Century Therapeutics' cell therapy technology



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Value Creation for IPO

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How a Robust IP Strategy Can Align with IPO Objectives

- "IPOs with patents are **valued on average 13.6%/12.6% higher at the initial filing/final offering than IPOs without patents**. The primary market does incorporate the value of patents into the initial prices before IPO dates." (*Journal of Accounting, Auditing & Finance*)
- "...we find strong evidence that startups **with more disruptive patents are significantly more likely to go public** and less likely to sell out. The link between technological disruptiveness and startup exists is economically large, as a one standard deviation increase in a startup's **technological disruptiveness is associated with a 21.8% increase in its IPO rate.**" (*Swiss Finance Institute*)

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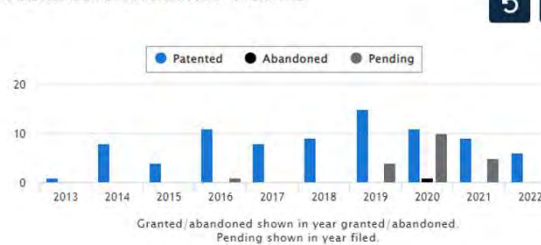
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Rani Therapeutics Pre-IPO Patent Trends

Takeaway:

- Rani Therapeutics filed for an IPO in 2021 and traded its first shares on July 30, 2021
- In the years leading up to the IPO, Rani strategically curated a patent portfolio containing 84 patents
- Rani priced its stock at \$11 per share, giving the company a valuation of \$75 million

TOTAL NUMBER OF APPLICATIONS - OVER TIME



LexisNexus, PatentAdvisor



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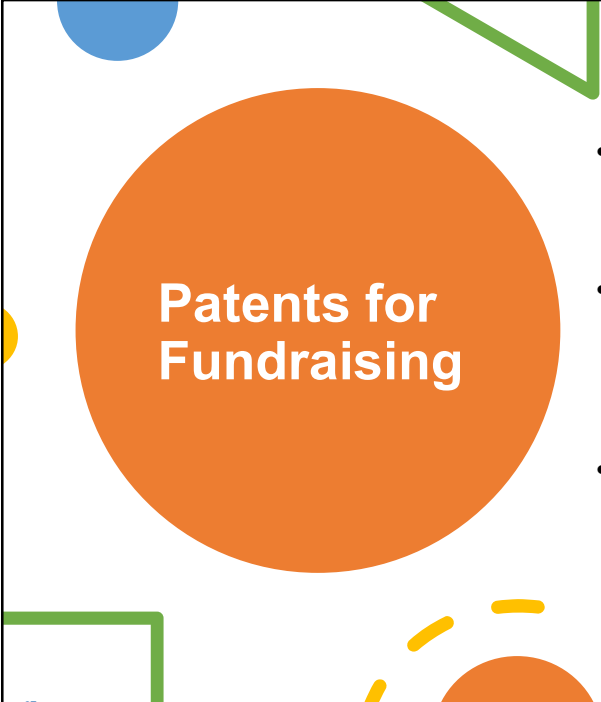
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Patents to Secure Funding




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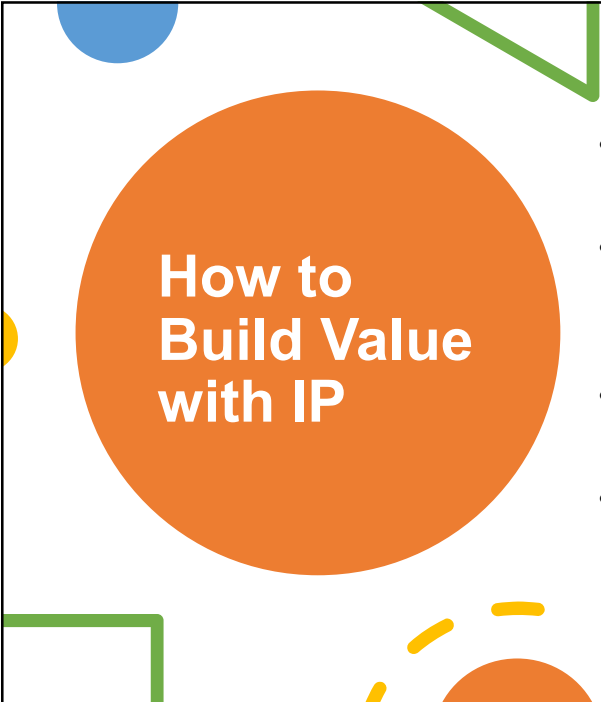
Patents for Fundraising

- Startups seeking patents raise more capital than their non-patent seeking peers
- 58% of VC funding went to startups with patents or with patent applications from 2011 to 2020 (*PitchBook Data, Inc.*)
- Newer programs in the past 5 years have emerged to utilize patents as collateral for debt-based finance




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How to Build Value with IP

- Understand industry assets and liabilities
- Evaluate what are the company's business objectives
- Create a plan
- Leverage new technologies



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 Questions?

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THE LIVE Q&A IS ABOUT TO BEGIN!

Keep submitting your questions in the questions window!




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Key Takeaways

- Patents are an asset class that can be used to generate a return on investment (ROI) and align with a company's business objectives
- Between 2011-2020, deal sizes for patent startups were 40% to 60% larger than those for nonpatent startups in a given year
- Across stages, patent companies raise capital at notably higher valuations than nonpatent companies
- Patent seeking companies exist via the public markets at a rate more than 5 times higher than non-patent seeking companies
- For acquisition exists, the median exit value for patent companies is 154.9% higher than it is for nonpatent companies per year on average (*PitchBook Data, Inc.*)



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