

# CTL IP Series

## IP Series #1: Understanding the Technology Transfer Process

10/26/2021

**CTL** CENTER FOR  
TECHNOLOGY  
LICENSING  
AT CORNELL UNIVERSITY

# AGENDA

- CTL Overview
- University Technology Transfer & Bayh Dole
- Intellectual Property Primer
- Evaluating and Commercializing Inventions

# CORNELL RESEARCH ENTERPRISE

\$1,190M – FY20 research expenditure

\$562M  
Federal Funding

~60%

~40%



**Cornell University**  
Ithaca - 12 Colleges and Schools



**Weill Cornell  
Medicine**  
NYC & Qatar



**CORNELL  
TECH**  
Roosevelt Island - NYC



Ithaca



Geneva, NY



Cornell Tech  
NYC



Weill Cornell Medicine  
NYC

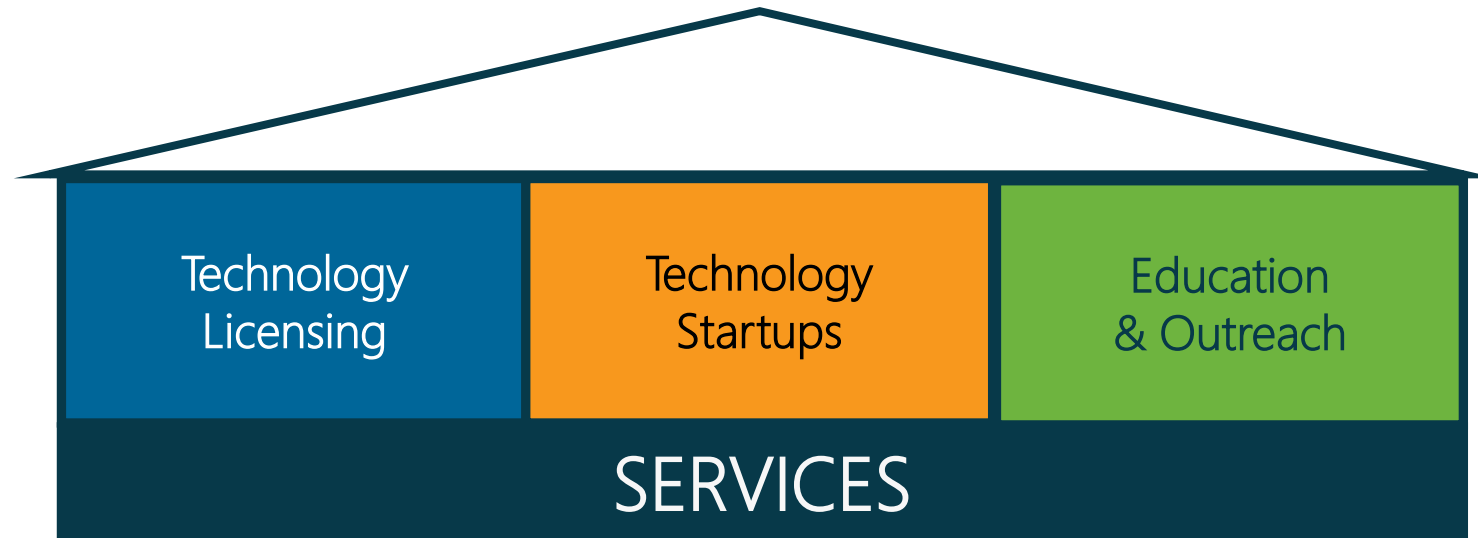


Weill Cornell Medicine  
Qatar



# CTL MISSION

- Catalyze technology commercialization to develop products and services from university innovations for societal benefits
- Promote new technology ventures to foster economic development within New York State and across the nation



# CTL ACTIVITY OVERVIEW (FY 2020)

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## Technology Licensing & IP

- Manage University IP
- Negotiate Licenses

518 IP Disclosures

408 Issued patents

69 Licenses & Options

\$20.5 Million in revenue

## Technology Startups

- IGNITE Gap Funding
- FastTrack
- Startup Networking
- VC Relationships

13 Startups

- 8 in NY State

IGNITE – Gap funding

3 startup projects funded

8 research-lab project funded

## Education & Outreach

- CTL Practicum
- WI2
- Externally focused events
- Internally focused events

9 Practicants

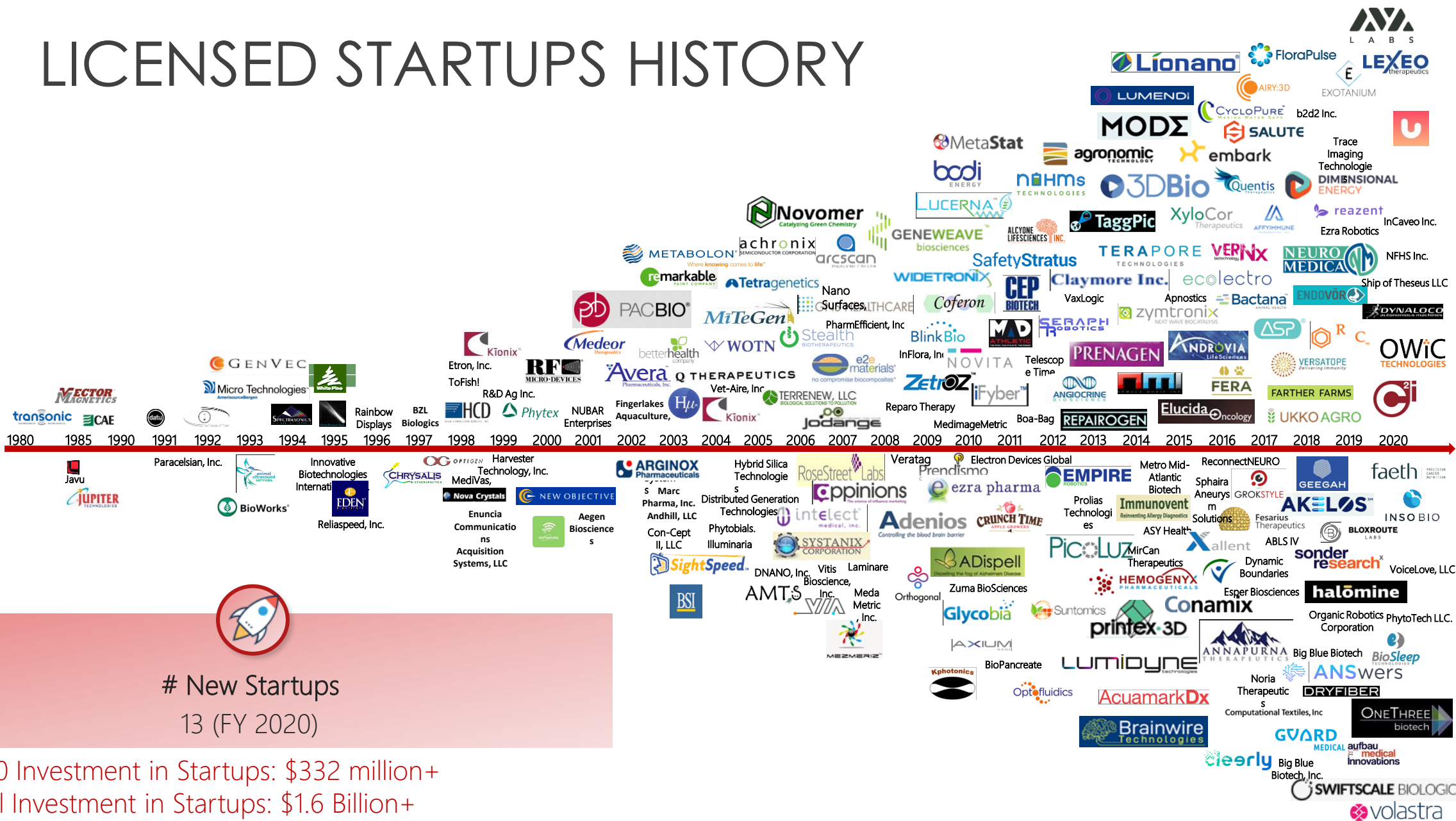
27 outreach events





# LICENSED STARTUPS HISTORY

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# New Startups  
13 (FY 2020)

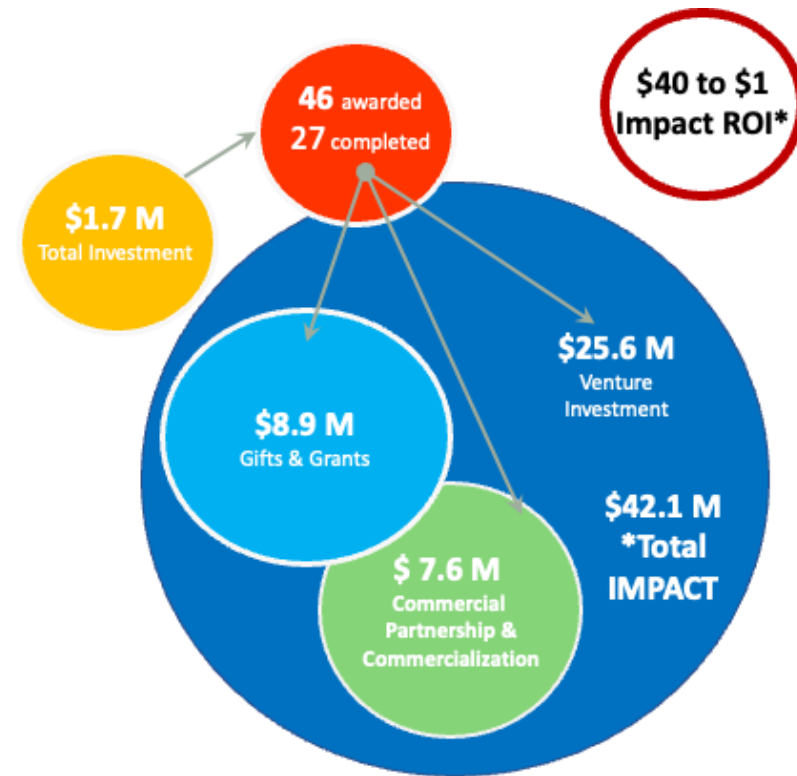
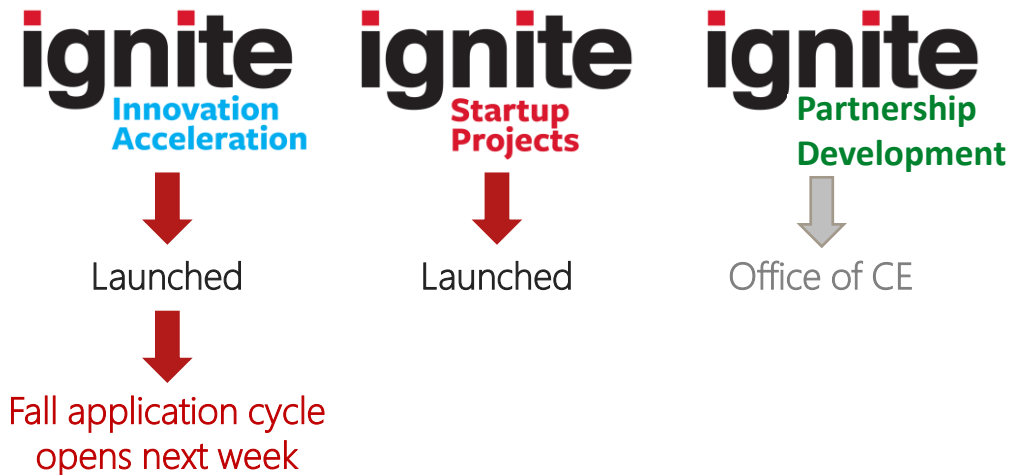
2020 Investment in Startups: \$332 million+  
Total Investment in Startups: \$1.6 Billion+



# IGNITE: CORNELL RESEARCH LAB TO MARKET GAP FUNDING SERIES

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- Gap funding Program
- Supported by the Office of the Vice President for Research and Innovation ("OVPRI")



\*Impact amount based on completed projects  
As of September 2021



# CTL PRACTICUM

Internship program for Cornell graduate students enrolled in a program in Ithaca, Geneva, Cornell Tech campuses & Cornell postdocs.

- A year commitment
- Up to 10 hours/week
- A formal onboarding training
- Support of the marketing process



## CTL PRACTICUM



**WE'RE  
HIRING!**

# INNOVATION FELLOWSHIP

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- Program for Ph.D. graduates and postdoctoral researchers interested in a career in business development, commercialization or entrepreneurship
- Full-time employees
- 3-year contract



Sarah Ward  
Innovation Fellow, Life Sc



TBD  
Innovation Fellow, Physical Sc

Learn more ▶



SCAN ME



# WOMEN INNOVATORS INITIATIVE (WI2)

## **Cornell Women Inventor Invention Disclosures to CTL 2009-2017** (Preliminary)

**Women Inventor Rate  
For Faculty** 23%  
  
(172 out of 762 faculty inventors)

## **Cornell Women Founders In Tech Startups 2009-2017** (Preliminary)

**Women founders** 18%  
  
(10 out of 56, those with Cornell inventor founders )

## 1. Webinar series

- “Women Inventors” on 6/25
- “Women Investors” on 9/30
- ‘Women Entrepreneurs” on 4/2021

## 2. Mentor Program



# CTL GROUPS & SERVICES

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The **Technology Initiatives & Outreach** group oversees CTL's marketing and branding, outreach, and communication efforts, and works to establish and strengthen relations with venture funds and CTL's startup companies.



**Lynda Inseque**  
Senior Program Manager,  
Technology Initiatives  
& Outreach



**TBD**  
Digital Media & Marketing  
Manager



**TBD**  
Innovation Outreach  
Specialist



**Roy Loomis**  
Administrative Coordinator

# CTL GROUPS & SERVICES

## The **Intellectual Property Management** group



**William Pegg**

Associate Director for IP

Bill leads the IP Management group which oversees the management of Cornell's IP and works closely with the BD & licensing officers to align business objectives with IP protection.

### Patent Management (Ithaca)



**Eugene Masters**

Intellectual Property  
Officer, Life Sciences



**Zoe Zhong**

Intellectual Property  
Officer, Physical Sciences

### IP Services



**Michelle Shields**

Intellectual Property  
Services Manager



**Renee Passeri**

Intellectual Property  
Assistant



**Stephen Wolfolds**

Intellectual Property and  
Governance Administrator

# CTL GROUPS & SERVICES

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## The **Licensing & BD Team – Life Sciences** group



**Phillip Ow**

Associate Director, Licensing & Business Development – Life Sciences

Phillip leads the Life Sciences Licensing and Business Development team and manages a broad IP portfolio covering human and animal health, synthetic biology, bioengineering, and polymers, among others



**Aris Despo**

Senior Licensing & Business Development Officer

Aris manages a broad IP portfolio covering agriculture, food, nutrition, chemistry, and medical devices, among others.



**Jessica Stein**

Senior Licensing & Business Development Officer

Jessica manages all of Cornell's plant varieties and germplasm. She works closely with the College of Agriculture and Life Sciences, Cornell AgTech, in Geneva, NY, and the Horticultural Research and Extension Center, in Riverhead, NY.



**Marie Donnelly**

Business Development & Licensing Associate for the Life Sciences

Marie supports the BD and Licensing Officers in managing and marketing the technology portfolio. She joined the Center for Technology Licensing in November 2020 as an Innovation Fellow in the Life Sciences.



**Sarah Ward**

Innovation Fellow

Sarah supports the Business Development and Licensing Officers in identifying, assessing, and marketing technologies from Cornell researchers.





# CTL GROUPS & SERVICES

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## The **Licensing Team – Physical Sciences** group



**Martin Teschl**

Associate Director, Licensing &  
Business Development –  
Physical Sciences

Martin leads the Physical Sciences Business Development and Licensing team. He also supports CornellTech and manages a portfolio of technologies relating to materials, cleantech, electronics & semiconductors, IT, and software.



**Ryan Luebke**

Licensing & Business  
Development Officer

Ryan, who joined the CTL team in 2017 as a Technology Commercialization Specialist, currently manages a technology portfolio covering optics, electronics and energy.



**Maxim Shabrov**

Business Development &  
Licensing Associate for the  
Physical Sciences



**TBD**

Innovation Fellow



# Weill Cornell Medicine Enterprise Innovation (est. 2021):

*Accelerating the best of biomedical innovation to market & translating groundbreaking research into revolutionary care*

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## Weill Cornell Medicine Enterprise Innovation



**Nurture, protect, and commercialize** innovative **life sciences technologies** developed by WCM faculty and students



**Weill Cornell Medicine**  
BioPharma Alliances  
& Research Collaborations

Further strengthen WCM's **research enterprise** through dedicated **research collaborations** and **alliances** with external partners



**Weill Cornell Medicine**  
BioVenture eLab

Foster a robust **entrepreneurial ecosystem** at WCM by providing **life sciences** entrepreneurship **training** and **resources**



**Weill Cornell Medicine**  
Daedalus Fund for Innovation

**Accelerate** early-stage translational research projects by **funding** generation of **critical data** needed to catalyze **external investment**



**Weill Cornell Medicine**



# CTL GROUPS & SERVICES



**Weill Cornell Medicine**  
Enterprise Innovation

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## CTL @ Weill Cornell Medicine



**Lisa Placanica**

Senior Managing Director,  
CTL @ WCM



**Brian Kelly**

Director, Technology  
Licensing



**Lukasz Kowalik**

Sr. Licensing and Business  
Development Officer



**Donna Rounds**

*Interim* Sr. Technology  
Licensing Officer



**Larry Schlossman**

Managing Director,  
BPA and Research Collaborations



**Dan-Oscar Antson**

Technology Licensing  
Officer



**Louise Sarup**

*Interim* Technology  
Licensing Officer



**Jamie Brisbois**

Business Development and  
Licensing Associate



**Jahan Ali**

Director,  
BioVenture eLab



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# University Technology Transfer & Bayh Dole

# TECHNOLOGY TRANSFER – WHAT & WHY?

- Process by which a discovery is brought to the marketplace for the benefit of the general public
- The [Center for Technology Licensing at Cornell University](#) is the office engaged in technology transfer on behalf of Cornell University
- Almost every University that receives federal research funding has a technology transfer office to assist faculty and staff



- University priorities
- Bayh-Dole Act - 1980



# CORNELL POLICIES & PRIORITIES

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<http://www.ctl.cornell.edu/inventors/cornell-policies.php>

Cornell claims ownership of its employee's inventions and most other forms of intellectual property and seeks to develop them:

- for the public good – NY State is first priority
- to get a reasonable return – licensing

As with other universities, licensing is a tool to:

- recruit and retain faculty and students
- increase research sponsorship
- create closer ties to industry

*Zero financial risk in working with CTL for faculty, staff and students*



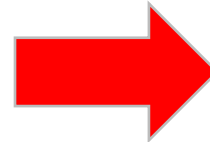
# BAYH-DOLE ACT

The Economist (2002):

*Possibly the most inspired piece of legislation to be enacted in America over the past half-century was the Bayh–Dole act of 1980*

## Pre Bayh-Dole:

- less than 5% of the 30,000 patents owned by govt' from federal research was licensed to commercial entities
- 0 drugs/vaccines
- Only about a dozen institutions (Cornell was one) had commercial technology transfer offices



From 1996 to 2017, up to...

**\$1.7** trillion

contributed to  
U.S. gross  
industrial  
output



**\$865** billion

contributed to  
U.S. gross  
domestic  
product



**5.9** million

jobs supported



**420,000+**

inventions disclosed...

**100,000+**

U.S. patents issued...



to research institutions since 1996

**13,000+**

start ups formed



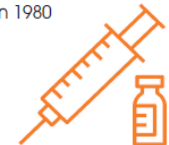
**67%**

of university  
licenses are to  
start-ups and  
small companies



**200+**

drugs and vaccines  
developed through  
public-private partnerships  
since Bayh-Dole Act  
enacted in 1980



# CORNELL IMPACT



# BAYH-DOLE ACT

Transferred right of ownership of intellectual property developed from federally funded research from the US Gov't to the academic research institution



1. Must try to commercialize
2. Preference for licenses to US companies
3. Preference for small business over large
4. US manufacturing requirements
5. Distribution of \$ to inventors

NOTE -- University must also:

1. Grant non-exclusive rights to US Gov't
2. Allow "march-in" rights (never used)



# Intellectual Property Primer



# ASSETS WE'RE LOOKING FOR...



## Therapeutics:

- Small Molecules
- Biologics
- Cell/Gene Therapy
- Novel Targets



## Ag & Food

- Crops & seeds
- Precision Ag
- Food Packaging & Processing
- Ingredients



## Research Tool:

- Mouse models
- Research mAbs
- New research methodologies



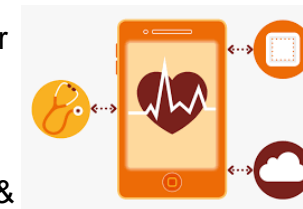
## Hi Tech:

- Robotics and Autonomy
- Materials
- Renewables
- Energy & Storage
- Software (AI/ML, Cyber security, crypto)
- Transportation & Infrastructure
- Quantum Eng., Comp & Communication
- Sensors
- Semiconductor & Electronics



## Data:

- Clinical care models/workflows
- Unique structured data sets
- INDs



## Digital Health:

- Therapeutics
- "alerts"
- Clinical work-flow aides
- AI/Machine Learning Algorithms

...IP THAT CAN IMPACT SOCIETY

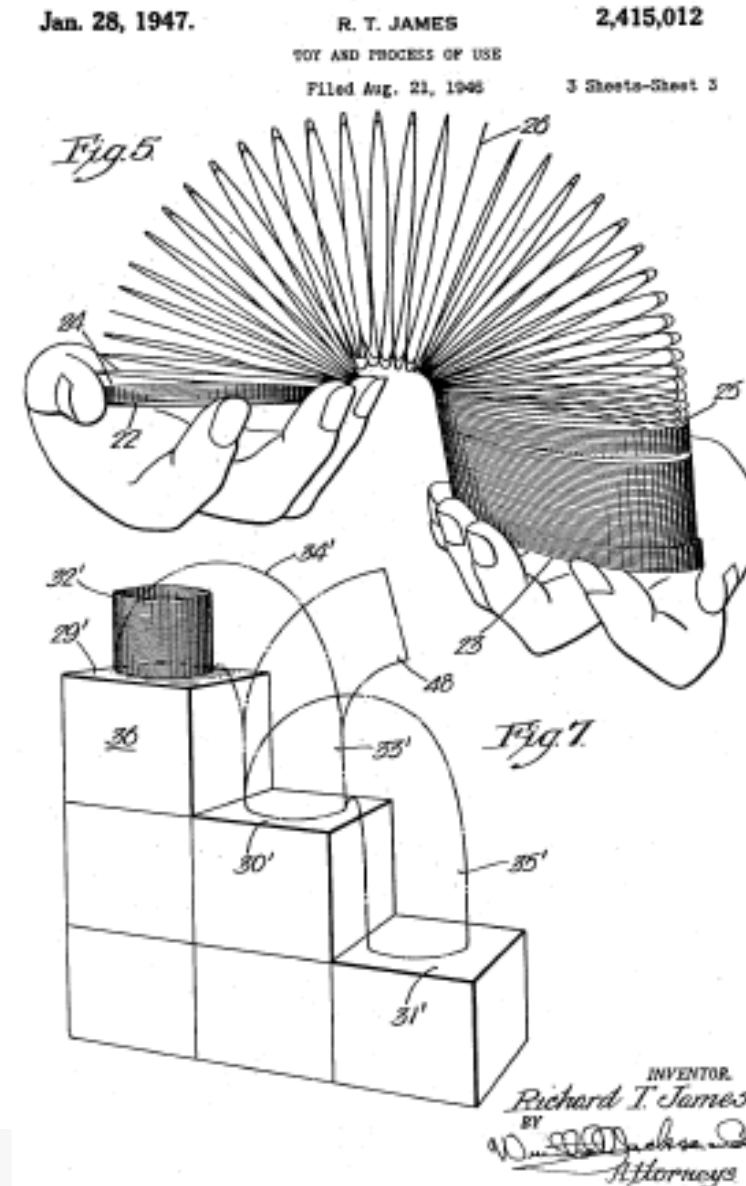
# TYPES OF INTELLECTUAL PROPERTY

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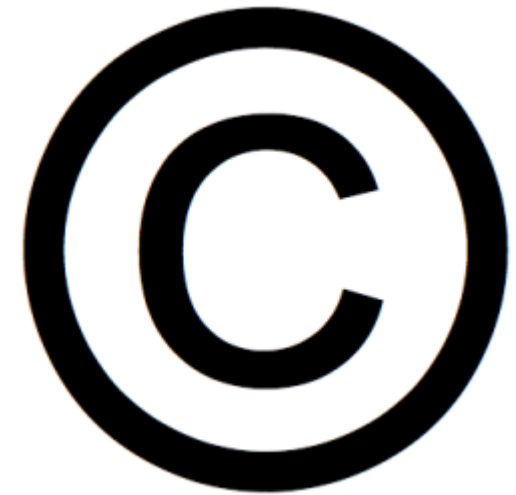
# PATENTS

- **Legal monopoly** granted in return for public disclosure of an invention
- Gives the right to **exclude others** from practicing the invention
- Only enforceable once issued
- Patents **valid from 20 years** from application date (not issue date)
- Inventorship is **legally defined** and distinct from authorship



# COPYRIGHT

- Copyright protects “original works of authorship fixed in a **tangible medium** of expression.”
- Copyright protects computer software as a “literary work”
- Data itself is not copyrightable, but a creative arrangement, annotation, or selection of data (a compilation) can be protected by copyright.



# TRADEMARK

- A trademark can be any word, phrase, symbol, design, or a combination of these things that identifies an origin for a particular good or service.
- Standard character-only trademarks

RUBYFROST®      SNAPDRAGON®

- Special form trademarks include trademarks that are stylized, have designs, or are in color.





# REQUIREMENTS OF PATENTABILITY

## What can be patented?

35 U.S.C. §101 – Subject Matter to be protected is limited to one of the four statutory categories:

- “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . .”

## What can't be patented?

Judicial exceptions: laws of nature, products of nature, *abstract ideas*, natural phenomena

# REQUIREMENTS OF PATENTABILITY

- 35 U.S.C. §102 – “**Novelty**” - No one has done the same thing previously
- 35 U.S.C. §103 – “**Non-Obvious**” - A person of ordinary skill in the relevant art would not reasonably have been expected to have modified or combined known prior art to arrive at the claimed invention.

# REQUIREMENTS OF PATENTABILITY

- 35 U.S.C. §112 – Requires that the specification include the following:
  - (A) A *written description* of the invention;
  - (B) The manner and process of making and using the invention (the *enablement* requirement); and
  - (C) The *best mode* contemplated by the inventor of carrying out the invention.

# TYPES OF PATENTS

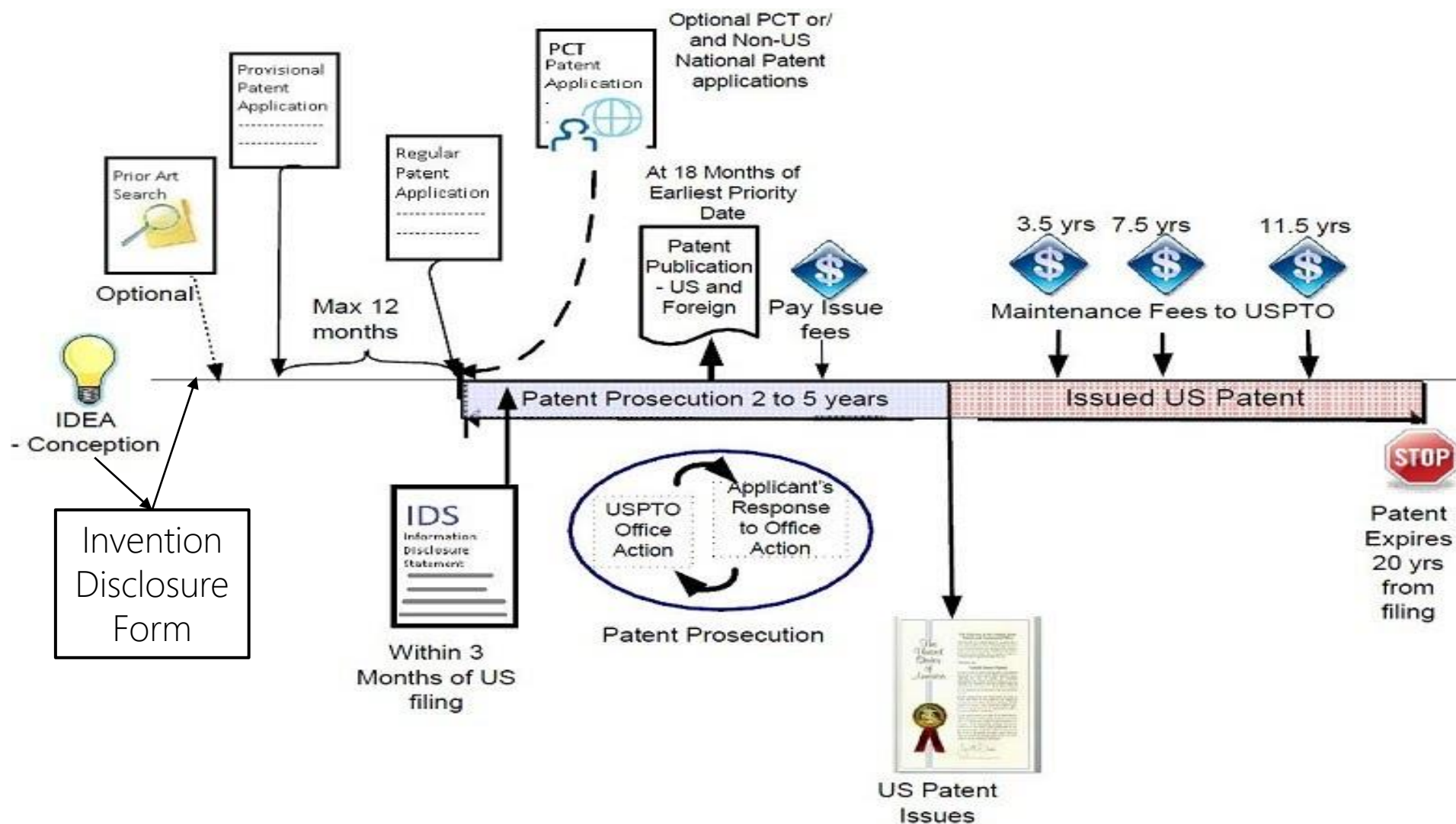
- Provisional Patent Applications

- Informal Application
- Can be filed relatively quickly
- Not Examined – Priority “placeholder” for subject matter that is disclosed and enabled
- Expires automatically after one year

- Non-Provisional /Patent Cooperation Treaty (PCT) Applications

- Formal applications
- Must be filed within one year of provisional application(s)
- Must **fully describe** the invention in sufficient detail to **enable** a person of ordinary skill in the art to make and use the invention (35 USC 112).

# PATENT LIFE CYCLE



# INVENTORSHIP

## Inventorship

- Defined relative to **claimed** subject matter of the invention.
- Inventorship can change during prosecution if claims are amended, cancelled or added.
- One must contribute to the **conception of the claimed invention** to be an inventor.
  - "One following oral instructions is viewed as merely a technician"
  - "Noninventor's work was merely that of a skilled mechanic carrying out the details of a plan devised by another."
- Merely assisting implementation, being on a team, or supervising a team does not automatically make a person an inventor.
  - "One who suggests an idea of a result to be accomplished, rather than the means of accomplishing it, is not a coinventor".



# NOTICE! PUBLIC DISCLOSURE CAN JEOPARDIZE PATENT RIGHTS



- Manuscript publication
- Pre-print postings (e.g., BioRxIV; early online access)
- Student thesis defense
- Published abstracts
- Posters/Talks
- Awarded federal grant applications
- Invited guest speaker events
- Social media postings
- Commercial use/sale

\*when in doubt contact CTL well before any such disclosure to discuss \*



# Evaluating & Commercializing Inventions

# THE (CONTINUAL) ASSESSMENT PROCESS:

## - An Iterative Dialog Between CTL And Inventor -

### **(some) Factors Considered When Deciding to Invest in an Asset**

- What problem does the technology address
- What are the competing solutions (both existing and in development)
- What advantages and distinguishing features does the technology have
- What is the development status - What are the immediate and longer-term "next steps" for further validation (timeline and funding)
- Is it a platform technology and if so what is its initial direction or indication
- Who is the ultimate customer and who will pay for it (and pay for what)
- What is the market size and is it large enough to support commercial development costs
- Who are the commercial partners in the field (corporate and investor)
- How can the intellectual property be protected and leveraged
- Are there freedom-to-operate concerns
- Will manufacturing be difficult
- What will the regulatory pathway look like
- What data are needed to support intellectual property strategy and commercial outreach



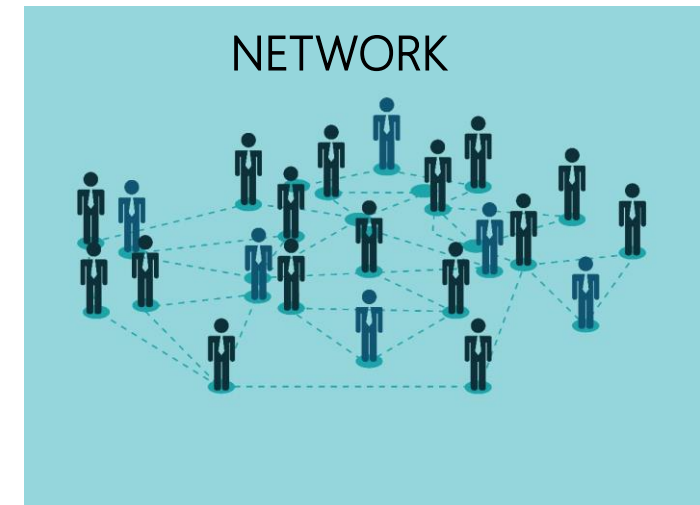
# MARKETING INVENTIONS – COMMERCIAL OUTREACH

- An Iterative Dialog with CTL, the Inventors, and (hopefully many) Potential Partners
- In consultation with inventors CTL will:
  - Generate marketing materials (focus on commercial value proposition)
  - Identify and contact target companies, entrepreneurs, investors
- Web postings, cold calls, email campaigns, social media
- Technology Showcase Events
- Network, network, network!
  - Seek recommendations, information, referrals
  - Alumni & Friends of Cornell with various backgrounds, expertise and industry experience
  - Cornell and Ithaca ecosystem – E@C, Rev:Ithaca, eLab, UNY iCorps, McGovern, Praxis incubators, etc.



# THE INVENTOR'S ROLE

- Technology Transfer – an ongoing iterative process in consultation with the inventors
- Inventors are critical to commercial marketing success!
- Anecdotal: 80% of university licensing deals are with startups and/or begin with the researcher's existing industry relationships (CTL's hit rate higher)
- Make industry contacts at conferences and let CTL know about them
- You are not “just” a scientist at the conference; you are also “selling” your inventions



# CONTACT INFORMATION

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## For Information about Invention Disclosures

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**Martin Teschl**

Associate Director, Licensing & Business  
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## For Information about CTL Programs

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# QUESTIONS?



<https://www.linkedin.com/company/center-for-technology-licensing-ctl-at-cornell-university>



@CornellTechTransfer



@Cornell\_CTL



<https://www.youtube.com/channel/UCliV8Q746KpmRgy2Ret6gLw>



<https://ctl.cornell.edu/>