

# Inventions, patents, and licensing: The process at Caltech

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*Office of Technology Transfer and Corporate Partnerships  
California Institute of Technology*

<http://innovation.caltech.edu>

## Topics

- **About my office (OTTCP)**
- What is a patent?
- How do I get a patent?
- Prior art and publication bars
- Inventorship, ownership, and licensing

# OTTCP can help you with IP matters

## What is IP (intellectual property)?

- **Patents** (protect inventions)
- **Copyright** (protects creative works – including software)
- **Trade secrets**
- **Trademarks / trade dress** (identify provenance)

## Why might you care?

- **Protection** of your work and rights
- **Commercialization** of your work
- **IP terms** in sponsored research agreements, collaboration agreements, internship agreements...

# Connecting with OTTCP

Caltech Home > OTTCP Home > For Caltech Researchers

**Caltech** Technology Transfer & Corporate Partnerships

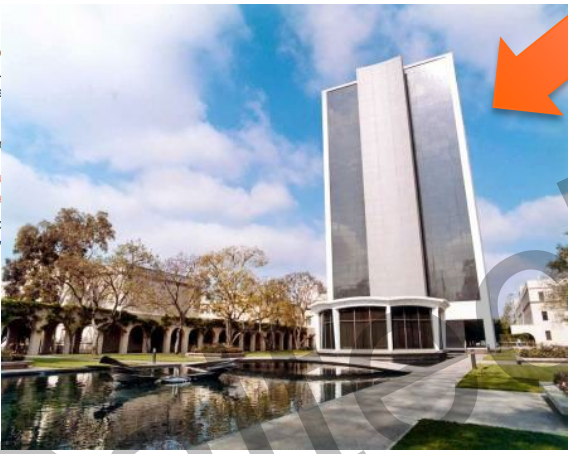
About For Caltech Researchers For Industry and Partners

## Working with OTTCP

The Office is committed to reach its full potential by supporting JPL's research...

Services provided include:

- Evaluate and protect intellectual property
- Negotiate licensing agreements



**Not sure who to contact?  
OTTCP general line, x3066,  
or [innovation@caltech.edu](mailto:innovation@caltech.edu)**

Visit the OTTCP website, [innovation.caltech.edu](http://innovation.caltech.edu), or our offices on the 6<sup>th</sup> floor of Caltech Hall

Contact your licensing team member:

- Steve Chapman, x6373
- Meimei Dong, x3288
- Rose Kiser, x4976
- John Nagarrah, x3269
- Jennifer Shockro, x2322

Directors:

- Hannah Carbone, x2381
- Case Cortese, x4942

EIRs:

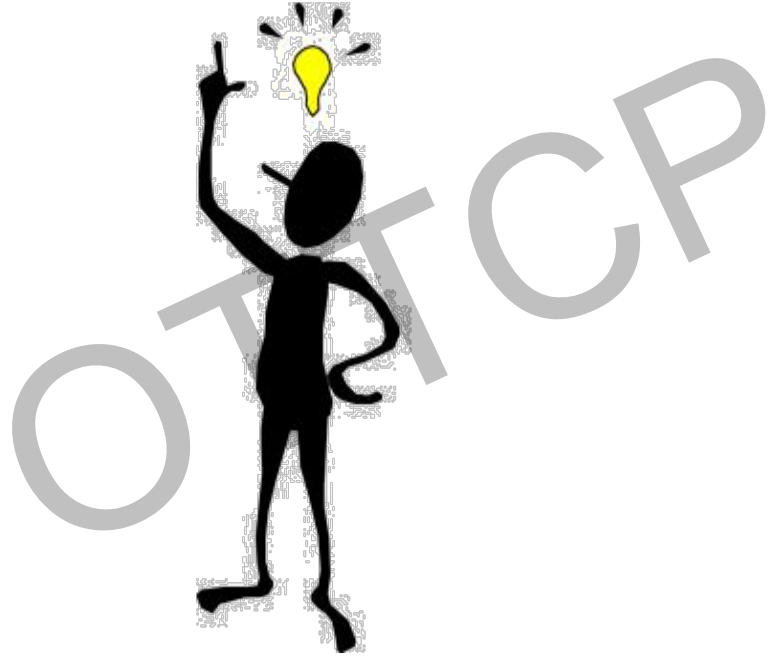
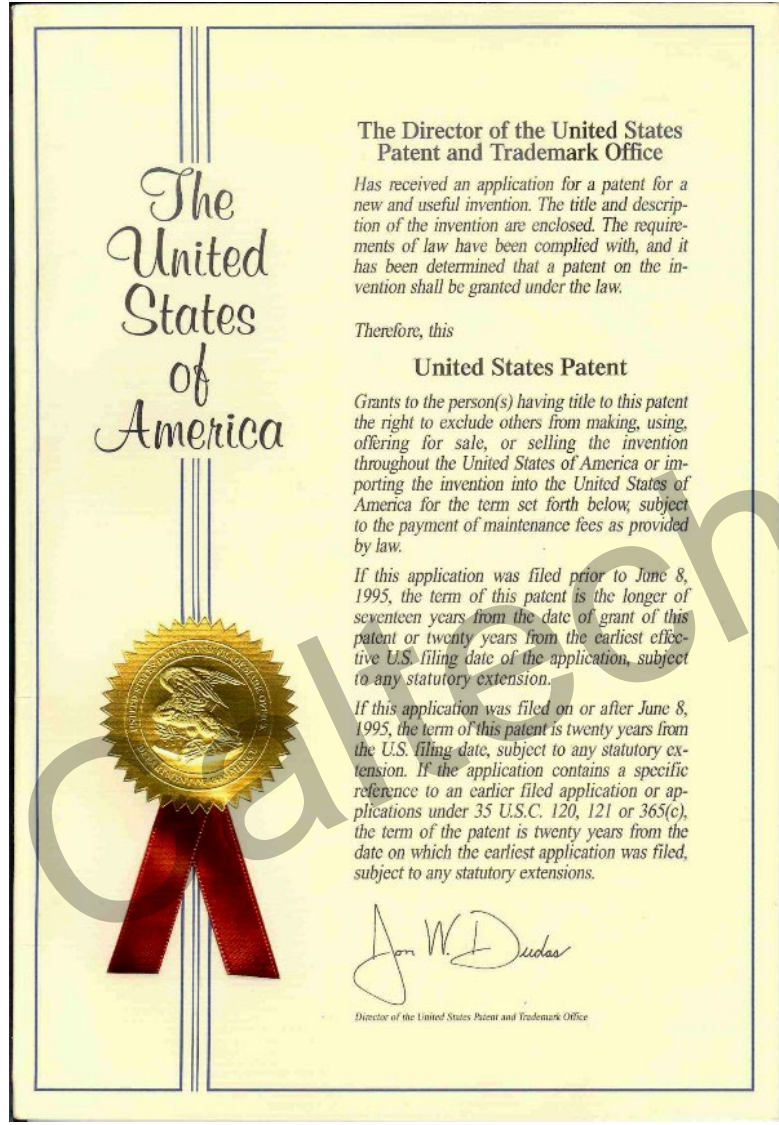
- Jay Chiang, x5793
- Julie Schoenfeld, x4096



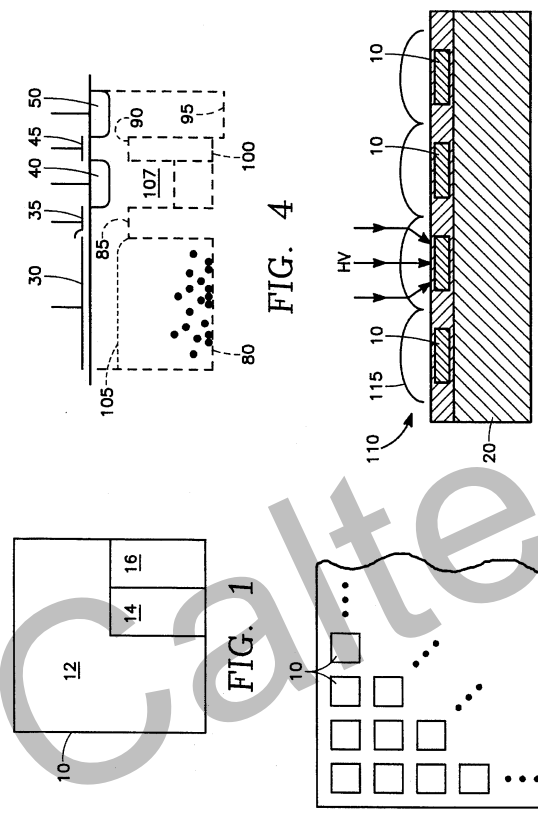
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# What is a patent?



“Person of Ordinary Skill in the Art”  
(POSITA)



**CLAIMS**

1. An imaging device including a monolithic semiconductor integrated circuit substrate, said imaging device comprising a focal plane array of pixel cells, each one of said cells comprising:

a photogate overlying said substrate for accumulating photo-generated charge in an underlying portion of said substrate;

a readout circuit comprising at least an output transistor formed in said substrate;

a charge coupled device section formed on said substrate adjacent said photogate having a sensing node connected to said output transistor and at least one charge coupled device stage for transferring charge from said underlying portion of said substrate to said sensing node; and

wherein said readout circuit is a complementary metal oxide semiconductor (CMOS) circuit formed on said substrate, said substrate being of a first conductivity type, said CMOS circuit comprising plural metal oxide field effect transistors of a first conductivity type, a well region of a second conductivity type in said substrate and plural metal oxide semiconductor transistors of a second conductivity type formed in said well region.

## With an issued patent...

Patentee can ***exclude*** (for a certain period of time\*) others (in the US) from:

- Making
- Using
- Selling, or offering to sell, or
- Importing into the US

the patented (claimed) invention.

Patent  
**infringement**  
= doing this  
without a  
license

\*20 years from first non-provisional priority date

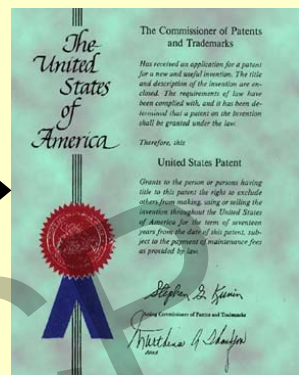
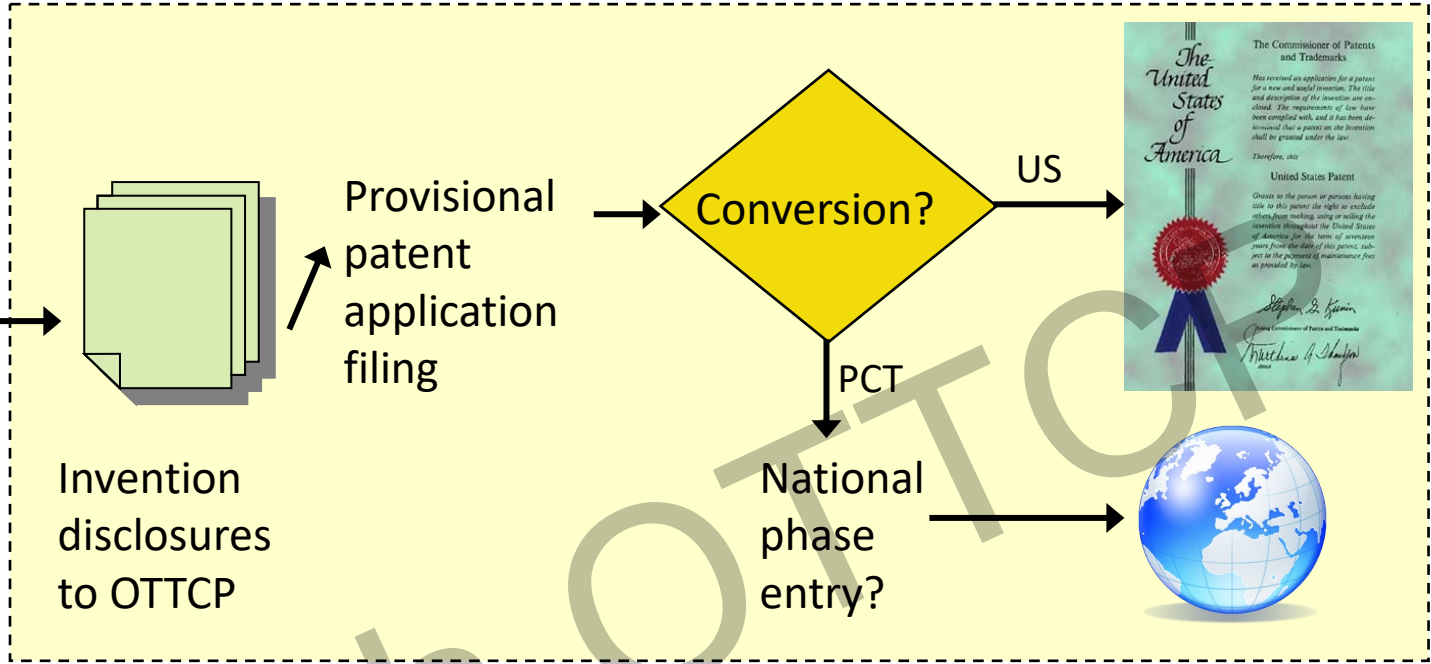


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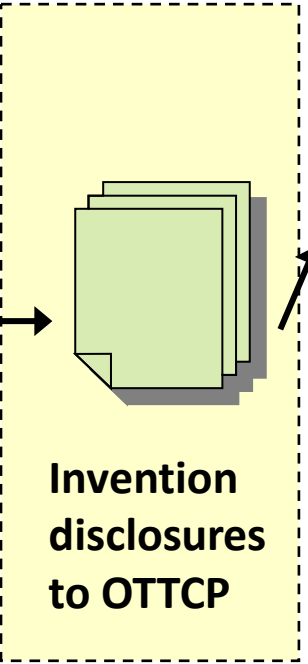
Scientists invent  
in research labs



Caltech

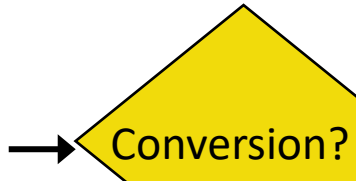


Scientists invent in research labs



**Invention disclosures to OTTCP**

Provisional patent application filing



US

PCT

National phase entry?

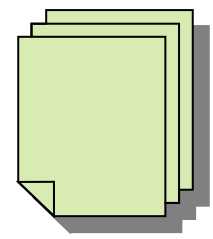


**Disclosure should include:**

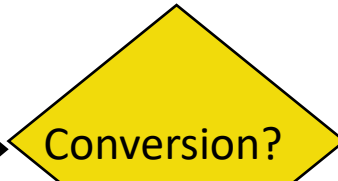
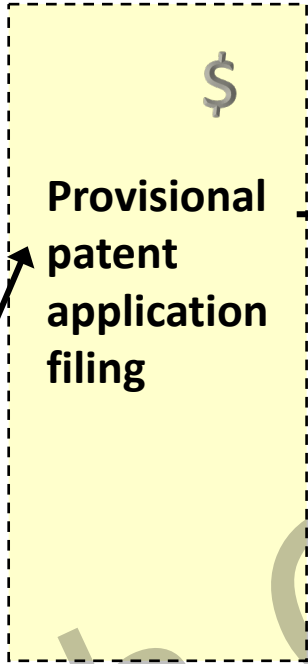
- Thorough description of invention – often a manuscript in preparation, including supporting materials; include a brief summary of the invention
- Names, contact information, citizenship, EEA residency status, signatures of inventors; identification of PI and primary contact
- ALL funding sources: federal, industry, foundation, other
- Past AND planned disclosures/publications of the subject matter



Scientists invent  
in research labs



Invention  
disclosures  
to OTTCP



US

PCT

National  
phase  
entry?

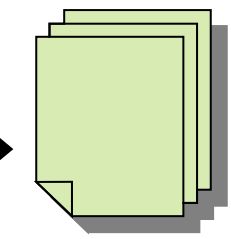


### Provisional patent application:

- “Coversheet” filed by OTTCP
- Quick and inexpensive
- Remains confidential, if not converted
- Does not need to have claims
- May be held up if disclosure form incomplete, or invention description insufficient

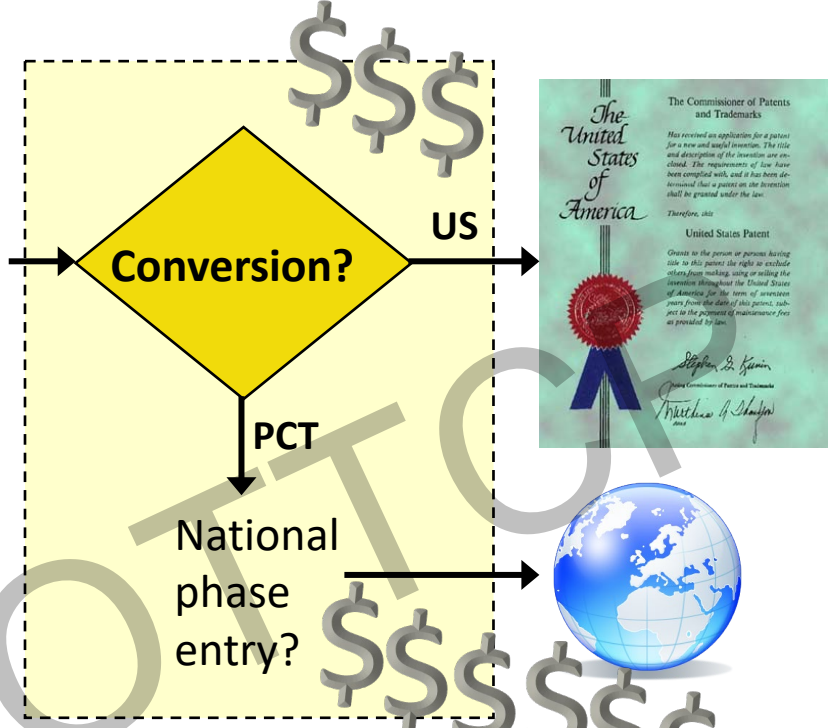


Scientists invent  
in research labs



Invention  
disclosures  
to OTTCP

Provisional  
patent  
application  
filing



**Conversion to non-provisional application:**

- Outside attorneys engaged for non-provisional filing
- Expensive (~\$10k US, + ~\$5k PCT)
- Several weeks' prep time (attorneys working with inventors)
- Published 18 months from priority date (typically, provisional filing date)
- Must have claims
- US and/or PCT?

# The examination process at the USPTO



Application submitted to USPTO

“Notice of Missing Parts”  
(fees, inventor oaths and declarations)

*---publication of application typically somewhere in here,  
18 months from priority date, always on a Thursday ---*

Restriction Requirement  
(sometimes)

Non-final Office action  
“on the merits”

“Final” Office action  
“on the merits”

Formalities

Patentability

Time (not to scale)

# Criteria for patentability



*“Whoever invents or discovers any **new and useful process, machine, manufacture, or composition of matter**, or any new and useful **improvement** thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”*

**Patentable subject matter (35 USC § 101)**

**Novelty (35 USC § 102)**

**Non-obviousness (35 USC § 103)**

} over the  
“prior art”

**Written description, enablement (35 USC § 112)**

# You're almost there...



## Notice of **allowance!**

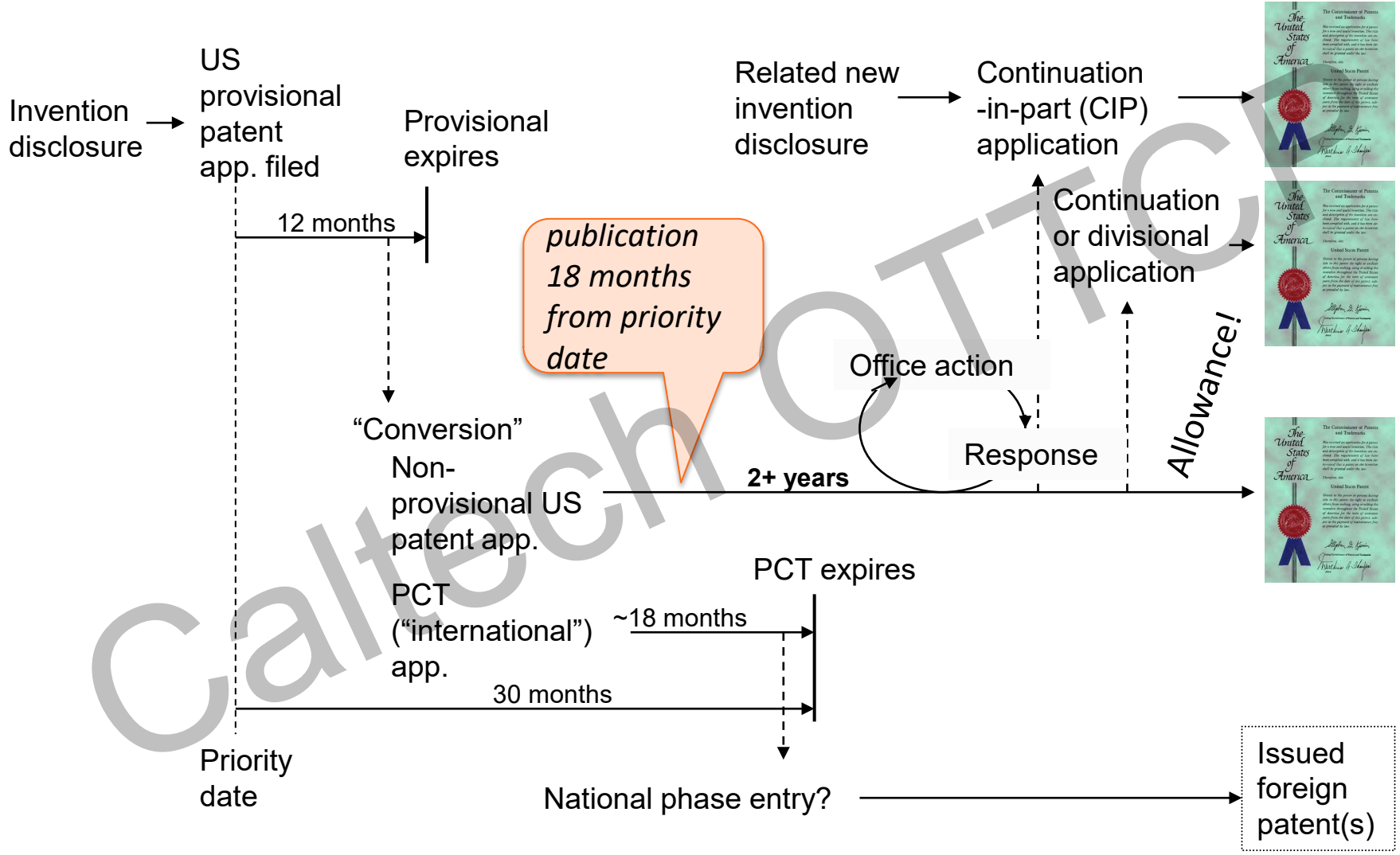
- Pay issue fee, and patent **issues** (always on a Tuesday)

BUT you're not done yet...

- **Maintenance fees** due after issuance at:
  - 3.5 years
  - 7.5 years
  - 11.5 years(in US; typically annually, elsewhere)
- Patent **challenges** (PGR, IPR)



# How long does it all take?



Time (not to scale)



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# Prior art timeline



Prov.  
app. filed

Non-prov.  
app. filed

No disclosure by anyone after non-prov filing is prior art



A, B

A, A', B, B', C



Prior art (if by someone else)

Prior art (if by someone else, with respect to C, possibly A' and B')

# What could be a barring disclosure?



Yours, or someone else's...

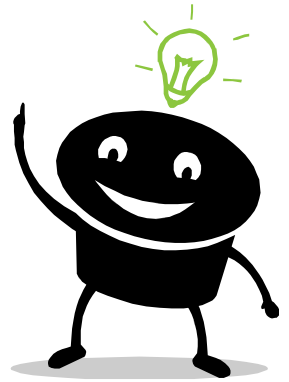
Yes, this includes  
**arXiv**

- Prior publication?
- Earlier patent application?
- Talk or presentation?
- Thesis? Thesis defense?
- Grant proposal?
- Just telling someone else your idea?

**It all depends!**

What about  
**ChatGPT**  
BY OPENAI  
?

# When should I disclose/file?



Conception



Reduction to practice



*Ideally: shortly BEFORE publication or other barring disclosure*

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# Who is an inventor?

Inventor = One who conceived the ***claimed*** invention

- Not one who merely reduces the invention to practice
- Legal determination made by outside lawyers if necessary



**INVENTORSHIP  $\neq$  AUTHORSHIP**



*Note: Inventor order DOES NOT matter!*

# Who owns an invention/patent?

- Inventor starts by owning her/his inventions
- However, under employee Patent Agreements, agree to **assign inventions to employer**
- Employer (Caltech) then owns the patent



*(Michael Yarish/CBS ©CBS Broadcasting, Inc.)*

- **Royalties shared with inventors** (25%, after cost recovery and 3<sup>rd</sup> party obligations)



# Sponsor rights

## Government

- Bayh-Dole Act (federal)
- Reporting/compliance obligations
- Government rights



## Foundations

- May include IP provisions, such as royalty-sharing or licensing requirements

BILL & MELINDA  
GATES *foundation*



## Industry

- Research sponsors from industry typically have first right to IP developed through their funding (patenting decisions, option to license, internal-use NERF)

# Collaborations

## UCLA

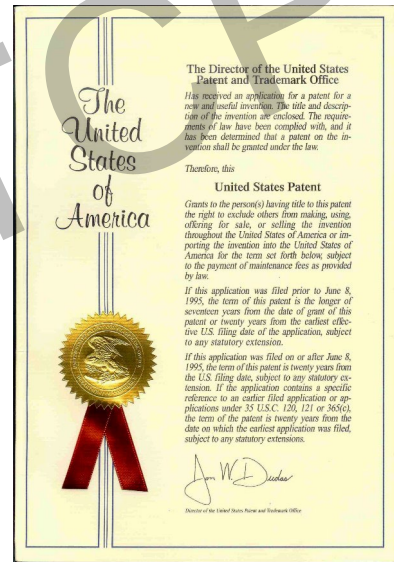


Inventors assign to UC Regents

Caltech and UCLA work out an IIA\*

Inventor assigns to Caltech

## Caltech



Jointly-owned patent (UC and Caltech)

\* IIA = Inter-Institutional Agreement

# What does Caltech do with its patents?

## OTTCP mission:

*...to drive the **transfer of scientific and engineering knowledge** created by our researchers to **maximize societal impact** by developing partnerships with industry through the creation of **new ventures, collaborations with corporations, and transfer of intellectual property** while nurturing an entrepreneurial environment.*

## How?

Licensing IP (patents) to startups or established companies, who develop and sell products/services

# What is a license?

- A license is an enforceable **contract** between licensor (IP owner) and licensee (IP commercializer)
- **Licensor waives its right to exclude** licensee from making, using or selling patented invention (or copyrighted software), in exchange for consideration (usually financial)
- Can be based on patents, copyright, know-how or combination

# Licensing – key terms



Running royalties, annual minimums

Diligence requirements

12 month option, low fee

Full license upon exercise

Modest/no upfronts, patent cost deferment

Caltech takes equity

Running royalties, annual minimums

Diligence requirements

Typically go straight to a license

Upfront license fee, immediate patent cost reimbursement

No equity

# Startup support for Caltech community

- **Grubstake** and **RI<sup>2</sup>** funding
- Favorable **licensing terms**
  - **Option agreements** give startup founders time to develop business plan, obtain funding
  - **Equity stake** reduces/eliminates upfront costs
- Making **connections** (to investors, advisors, professionals)
- **Entrepreneur-in-residence** (EIR) program
- **Caltech Seed Fund** and Wilson Hill Fund
- **Caltech Innovation Center**

# Expensive lottery tickets...

Invention disclosures

5,526

invention disclosures

US patents issued

2,688

US patents issued

License agreements granted

682

license agreements granted to companies

Revenues over \$1M

36

license agreements generating > \$1M

Revenues over \$100M

2

generating > \$100M

✕ DNA Sequencer\*  
⊙ CMOS camera

\*Invention pre-dates 1995

(From OTTCP 2016 Impact Report)

**Thank you for your time and attention!**

**Any questions?**

Caltech OTTCP