Inventions, patents, and licensing: The process at Caltech

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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

Visit the OTTCP website, innovation.caltech.edu, or our offices on the 6th floor of Caltech Hall.

Contact your licensing team member:
- Steve Chapman, x6373
- Meimei Dong, x3288
- Rose Kiser, x4976
- John Nagarah, x3269
- Jennifer Shockro, x2322

Directors:
- Hannah Carbone, x2381
- Case Cortese, x4942

EIRs:
- Jay Chiang, x5793
- Julie Schoenfeld, x4096

Not sure who to contact? OTTCP general line, x3066, or innovation@caltech.edu
- About my office (OTTCP)
  - What is a patent?
  - How do I get a patent?
  - Prior art and publication bars
  - Inventorship, ownership, and licensing
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.

\[\text{Patent infringement} = \text{doing this without a license}\]

*20 years from first non-provisional priority date
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Scientists invent in research labs

Invention disclosures to OTTCP

Provisional patent application filing

Conversion?

PCT

National phase entry?

US
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
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
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**
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)  
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?

- Invention disclosure
- US provisional patent app. filed
- Provisional expires

Publication 18 months from priority date

- “Conversion” to non-provisional US patent app.
- PCT (“international”) app.
- PCT expires
- ~18 months
- 30 months

Continuation or divisional application

Office action
- Response

Allowance

Continuation-in-part (CIP) application

National phase entry?

Issued foreign patent(s)

Time (not to scale)
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Prior art timeline

- **Dec 8 2022**: Prov. app. filed (A, B)
- **Dec 8 2023**: Non-prov. app. filed (A, A', B, B', C)
- **Dec 8 2024**: No disclosure by anyone after non-prov filing is prior art

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...

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

Yes, this includes arXiv

It all depends!
When should I disclose/file?

Conception

Reduction to practice

Less prior art

Timing of filing

Better data

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 ≠ 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
- Royalties shared with inventors (25%, after cost recovery and 3rd 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

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

* 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

**START-UP**

- Running royalties, annual minimums
- Diligence requirements
- 12 month option, low fee
- Full license upon exercise
- Modest/no upfronts, patent cost deferment
- Caltech takes equity

**A BIG COMPANY**

- 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 RI² 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**
Caltech’s Record of Innovation since 1995

Expensive lottery tickets...

- 5,526 invention disclosures
- 2,688 US patents issued
- 682 license agreements granted
- 36 license agreements generating > $1M
- 2 license agreements generating > $100M

(From OTTCP 2016 Impact Report)
Thank you for your time and attention!

Any questions?