



Intellectual Property Management for Agriculture and Natural Resources

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University of California
Agriculture and Natural Resources

April 10, 2014

AGENDA

I. Preface

- IP – what it is? Why does it matter? Who owns it?

II. Contracts & Grants (“Pre-Invention”)

- Management of Inventions depends heavily on sponsor obligations... UC and sponsors negotiate these obligations before the research even begins!
- ANR Contracts & Grants

III. Technology Transfer (“Post-Invention”)

- IP Management and Licensing
- UC Davis InnovationAccess

Property

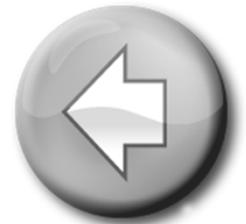
❖ Real Property

- Land
- Fixtures

❖ Personal Property

- Tangible
- Intangible (intellectual): patents, copyrights, trademarks

❖ Common Attributes: own, buy/sell, lease, mortgage, attach/lien, inherit



What is Intellectual Property?

- ❖ **Intangible personal property which is a product of the intellect**
 - **Patent**
 - Protects new and useful ideas
 - **Copyright**
 - Protects original expression
 - **Trademark**
 - Protects name/logo used to identify goods
 - **Trade Secret**
 - Protects a secret, as long as it is kept a secret

Why is a patent important?

- ❖ **Development of new products require a large investment of time and money**
- ❖ **Companies may not invest in development of an invention without a good return on investment**
- ❖ **A time-limited monopoly on a product creates the environment for return on investment**
- ❖ **Patent protection provides such a monopoly.**
 - **Similar reasoning applies to other forms of IP.**

A Patent Is...

A patent is:

- Grant by the federal government of the right to EXCLUDE others from practicing an invention (what is covered by claims)
- Personal property that can be sold, assigned, licensed and inherited
- Protection for 20 years from filing date
- Enforceable – whereas, a patent application is not enforceable.

A patent is NOT:

- Not self-enforcing
 - May require court action
- A patent is not permissive
 - There may be a “dominating” patent

Types of Patents

❖ Utility patent

- **Provisional – valid for 12 mo.; not examined.**
- **Non-provisional**

❖ Design patent

❖ Plant patent

- **Some restrictions.**
- **Other protection for certain plant varieties can be gained from Plant Variety Protection (PVP) Certificate, which is not a patent and not examined by the U.S. Patent and Trademark Office.**

Before the Patent, you must have... Invention

❖ Conception

- Complete and operative idea

❖ Reduction to Practice

- Actual – Physical making or performance
- Constructive – Filing of patent application

Who is an Inventor?

Inventorship determination:

- **Intellectual contributor (More than an implementer or “a pair of hands”)**
- **Inventorship is a legal determination.**
- **Authorship is not always equal to inventorship. Were the individuals’ contributions sufficient to justify inventorship status?**
- **Once inventorship is established, evaluate whether inventors had an obligation to assign the invention rights to someone else (such as an employer). This determines ownership.**

Ownership

Ownership determination:



Remember
“Inventors First!”

Ownership originally vests with inventors. Inventors can assign to other entities (often required under employment contracts)

Ownership

JOINT Ownership:

If some inventors assign to one entity, and one or more co-inventors assign rights to another entity, there is joint ownership.

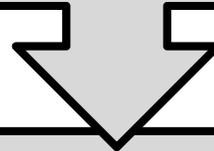
If there is joint ownership, the parties can establish an agreement between them to consolidate management and licensing of the jointly-owned IP.



Who owns inventions created at UC?

Inventors First!

Under patent law, ownership of an invention belongs to the inventor.



UC Patent Policy

(Effective October 1, 1997)

Key Points:

- > Mandatory obligation to *report* all inventions
- > Inventor *assigns* title to UC for inventions where campus funds/resources used and where invention is within inventor's scope of work.
- > Distribution of Net Income (per '97 policy):
 - 35% to inventors
 - 65% to Davis campus for research-related purposes

Acknowledgement of the UC Patent Policy

Who must sign the Patent Acknowledgement?

Why was the P.A. amended?

Stanford v. Roche – a promise to assign is not an assignment.

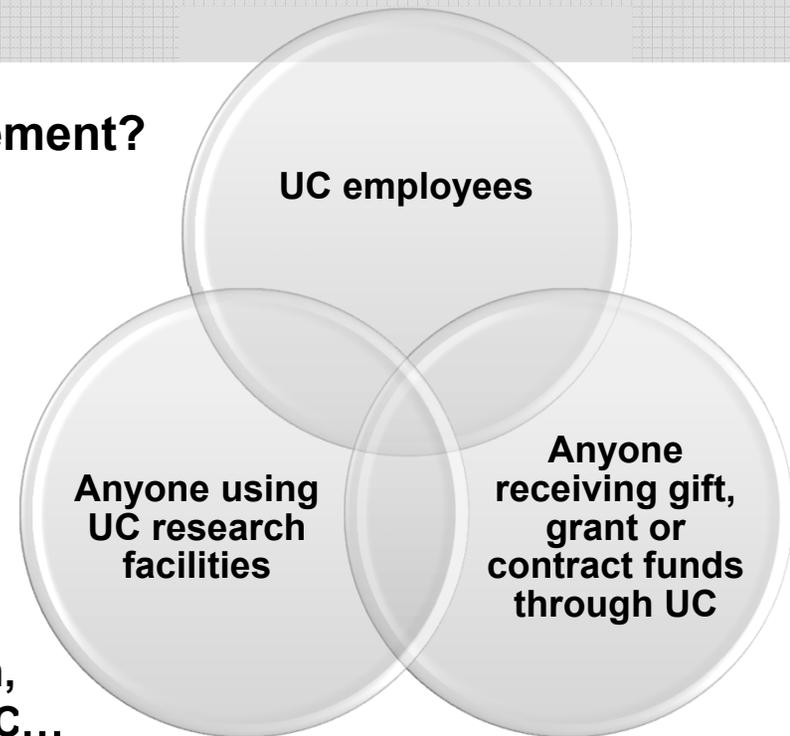
“You acknowledge your obligation to assign” inventions to UC...

is changed to

“You acknowledge your obligation to assign, and hereby do assign,” inventions to UC...

Ensures that your IP obligations to UC come first-in-time and are controlling over outside agreement(s) that you enter into.

No change to distribution amounts.



HAVE YOU SIGNED THE AMENDMENT TO THE PATENT ACKNOWLEDGEMENT?

II. Contracts & Grants



Sponsor Obligations

We will see that the funding used to create an invention is important, as UC may owe IP rights to a sponsor of research. Therefore, UC follows these **PRINCIPLES** when we accept grants & contracts on behalf of our researchers:

- **Open dissemination of research results**
- **Commitment to students**
- **Accessibility for research purposes**
- **Public benefit**
- **Informed (researcher) participation**
- **Legal integrity and consistency**
- **Fair consideration for commercial use**
- **Objective decision making**



- From University of California's "Principles Regarding Rights to Future Research Results in University Agreements with External Parties" (1999)

Who are our Sponsors?

Federal Government – resultant IP must be managed according to the Bayh-Dole Act.

Foundations/Non-profits – resultant IP must be managed in accordance with the award.

State Agencies – resultant IP must be managed in accordance with the contract.

Companies – resultant IP must be managed in accordance with the contract.

What happens when multiple funding sources contribute to one invention?

Federally-funded Inventions: Bayh-Dole Act

(35 U.S.C. 200-212, enacted in 1980, amended in 1984)

Act allows small businesses and non-profit organization to retain title to a federally funded invention, and they must (abbreviated list):

- ❖ **License patent rights, but do not assign them to others (some exceptions);**
- ❖ **Disclose the gov't's interest in patent applications and notify the gov't before abandoning any patent application;**
- ❖ **Share licensing revenue with inventors—how much to share was left up to individual institutions;**
- ❖ **Use any residual income retained by the institution for research and education;**
- ❖ **Grant a royalty-free non-exclusive license to U.S. Gov't for its own use;**
- ❖ **Require licensees to manufacture products in the U.S. that were to be sold in the U.S.;**
- ❖ **Give preference to small businesses; and**
- ❖ **As a final safeguard, the gov't retained the right to grant a compulsory license in the public interest if the invention was not being practiced.**

The provisions of Bayh-Dole apply to inventions conceived OR reduced to practice. (This is why “conceived AND reduced to practice” is important to include in all other agreements.)

Foundations/Non-profits

Foundation/non-profit contracts vary greatly with respect to IP requirements.

Select Examples:

Bill & Melinda Gates Foundation has “global access” policy.

Morris Animal Foundation, American Heart Association, and others have revenue sharing provisions.

Private Companies

- ❖ **May want ownership of IP created by UC researchers**
- ❖ **May try to reach through to IP made outside the agreement/project**
- ❖ **May want Background IP**
- ❖ **May want inclusion of unprotectable research results**

We will discuss each of these....

Ownership of IP

TomatoCo wants to sponsor a research project to improve the soluble sugars in conventional tomato varieties which will be conducted by UC's Dr. Vege. TomatoCo sends the ANR Contracts & Grants Office a research agreement that states,

“All inventions created under this research project will be jointly owned by UC and TomatoCo.”

Any problem?



Ownership of IP

❖ Why does UC avoid giving away ownership of IP?

- **Public Benefit:**
 - public asset;
 - ensure diligent development
- **Informed (Researcher) Participation:**
 - UC researchers' expectations under UC Patent Policy
 - campus expectations of royalty income
- **Legal Integrity:**
 - Third party obligations (MTAs?),
 - Bayh-Dole (prohibits assignment of invention if federal funding is involved.);
 - Tax Reform Act of 1986 (prohibits assignment if research was done in buildings financed with tax-free bonds)
- **Fair Consideration:**
 - UC should receive fair consideration for the commercial use of the results of its research.

Ownership of IP

Although UC retains ownership of inventions generated by our researchers, UC can give the Sponsor a commercial license to make, use and sell products stemming from the invention. This commercial license meets the sponsor's competitive advantage needs and their proprietary interests.

Our efforts to give Sponsor access (but not ownership) to UC IP are highly successful!

Reach through to IP made outside the agreement

UC offers to sponsors a first right to negotiate an exclusive commercial license to...



Inventions from the specific project they funded

- > Avoid reaching to unrelated researchers at our campus (or other UC campus...)**
- > Avoid reaching to PI's other projects**

Inventions made in the period of performance of the project

- > Not inventions made one year before the project started....**
- > Not inventions made one year after the project ended...**

Inventions that are potentially patentable

- > Not the researcher's know-how, tangible materials, data... (cross-over to unprotectable research results...)**

Oh My! *Case Study*

Sweet Bee Company asks Prof. Niceperson to perform research regarding bee pheromone synthetics that might enhance clover honey generation. Sweet Bee's sponsored research agreement states, "**Sweet Bee shall have a first right to negotiate an exclusive, commercial license to any inventions or discoveries conceived or reduced to practice in the performance of this project.**" Prof. Niceperson concludes the Sweet Bee project, with a rough idea of how a synthetic pheromone might be made...

Two years later, Honey Bear Company funds Prof. Niceperson to conduct subsequent studies aimed at increasing orange honey generation. The Sponsored Research Agreement states, "**Honey Bear shall have a first right to negotiate an exclusive, commercial license to any inventions or discoveries conceived or reduced to practice in the performance of this project.**" Prof. Niceperson actually synthesizes the synthetic pheromone and tests its effectiveness.

Prof. Niceperson discloses a Record of Invention to InnovationAccess describing a synthetic bee pheromone that, when sprayed on hives, results in a 25% increase in honey generation. The invention is applicable to multiple types of honey, including clover and orange.

Sweet Bee and Honey Bear contact InnovationAccess to get the exclusive license to the patent rights.

Who gets the exclusive license?

Professor Niceperson Case Study AND vs. OR

“Conceived OR reduced to practice”

Vs.

“Conceived AND reduced to practice”

- **MAJOR negotiating point in many contracts!**
- **With \$3B in external research funding realized by the UC system each year, along with thousands of inventions to manage, it is critical to be able to manage UC’s IP obligations to sponsors.**
- **“Conceived and reduced to practice” -- helps us manage which inventions are owed to which sponsor.**
- **“Conceived or reduced to practice” -- allows a sponsor’s IP rights to reach to past conceptions (*under what funding?*) and future reductions to practice (*under what funding?*).
(Indefinite reach into the future can limit future research funding we can accept!)**

The Best!

Our Favorite:

“UC shall grant to Sponsor a time-limited, first right to negotiate an exclusive commercial license to *patentable inventions conceived and first actually reduced to practice in the direct performance of research under this Agreement.*”



Background IP

It is high risk to promise a sponsor rights to unidentified background IP in a research agreement.

- **May be impossible to pre-identify (before research has begun; before invention is invented...)**
- **Unknown conflicting obligations**
- **Inventor of background technology could be anywhere in the UC system**
- **Background technology could precede or follow the sponsored project**
- **Tracking problem**

Sponsor may want inclusion of unprotectable research results: *Case Study*

Professor Chem has a research agreement from Metals Inc. to investigate the molecular structure of titanium alloys and analyze the optimal dimensions of titanium-based cutting tools.

The research agreement says,

“UC shall grant to Metals an exclusive commercial license to patentable inventions, know-how, copyrighted materials, designs, concepts, data, trade secrets, logos or other tangible or intellectual property developed in the performance of this research agreement...”

In his research, Prof Chem discovers the optimal design for the cutting edge of a titanium-based tool. He drafts a manuscript describing his findings. He also makes several titanium cutting tools in his lab.

- * Can Prof. Chem publish his findings?
- * Can Prof. Chem share the tools with a colleague at U.Arizona?
- * How will Metals Inc. exercise their exclusive right to Dr. Chem’s know-how?

Sponsor may want inclusion of unprotectable research results

How can UC fulfill a promise to exclusively license unprotectable research results to a Sponsor?

- **Give Sponsor ACCESS to research results**
 - **Technical Reports**
 - **Prepublication Review Rights**
 - **Transfer materials, if appropriate (not exclusive)**
- **Access ≠ Unlimited commercial rights**
- **Protect researcher's right to publish (maintain copyrights)**
- **Communication with Sponsor – early and often – is key!**
 - **What are Sponsor's concerns? What do they really need? How can we work together to mutually benefit?**

ANR Contracts & Grants

If you are a C.E. Specialist based at UC Riverside or UC Berkeley and have an invention to disclose, please follow their disclosure procedures. You can find this information at:

❖ UC Riverside:

- To initiate the invention disclosure process, please use the Invention Disclosure Form on their [forms webpage](#).
- Email the fully completed Invention Disclosure Form to Judy Swineford at (judy.swineford@ucr.edu).

❖ UC Berkeley:

- To initiate the invention disclosure process please use the Invention Disclosure Form (IDF) available for downloading in [DOC] or [PDF] format.
- Submit the completed IDF with original signatures to:
 - Director
 - Office of Technology Licensing
 - 2150 Shattuck Avenue, Suite 510
 - Berkeley, CA 94720-1620

III. UC Davis InnovationAccess

If it is so important for UC to maintain control of IP developed by UC researchers... what does ANR do with it?

UCD INNOVATIONACCESS

UCD InnovationAccess: Who are they? What can they do for you?

❖ Intellectual Property Management

- Tell them about your inventions and discoveries!
 - They provide patentability assessments on new inventions.
 - They manage patent applications & patents.
 - They find licensees - Licenses bring revenue back to UC and inventors!

You discovered something... now what?

Contact Office of Contracts & Grants

Complete a Record of Invention (ROI) form and forward to UCD IA. The ROI form tells them:

- **What is the invention...**
- **Who are the inventors...**
- **When will/did you publish...**
- **Which funding was used...**

On the ROI, you'll write down the Inventors

POP QUIZ! INVENTORS

❖ Inventors make an intellectual contribution

- Is the lab tech who is functioning just as an implementer or a “pair of hands” a proper inventor if he/she did not also make an intellectual contribution?
- Are the inventors simply all of the authors on the manuscript?
- Can improper inventorship invalidate a patent?

❖ Inventorship drives ownership

- UC employees always have an obligation to *disclose* inventions to UC, and they usually (but not always) have an obligation to give ownership of the invention to UC.

On the ROI, you'll answer: When will/did you publish?

We fully support your right to publish!

We also want you to know that once you publicly disclose your invention, patent rights are lost!

Some countries (i.e., U.S., Canada, Japan) have a limited grace period. In the U.S. we can still file a patent application within 12 months of your public disclosure. (However, if someone else publicly discloses your invention, we lose all U.S. rights.)

We really like it when you tell us about your inventions before you tell the public!

On the ROI, please also tell us about...

Other Agreements

1. Research Agreements:

- Are any IP rights owed to a sponsor of research?
- Federal funds used? Bayh-Dole requirements.

2. MTAs, CDAs:

- Does the invention contain any third party materials?
- Was invention developed from third party confidential information?
- Do terms of any relevant MTAs, CDAs, or POs restrict licensing or commercialization of the invention?

3. Other Agreements:

- License Agreements: Is invention already licensed or optioned? (investigate territories/fields of use/exclusivity)
- Recall Stanford inventor assigned patent rights to Cetus in a *confidentiality* agreement.

How does UC decide whether to file a patent application on your disclosed invention?

1. Patentability Analysis

Invention must be:

- **Patentable Subject Matter**
 - Process, machine, article of manufacture, composition of matter, improvement
- **Useful**
 - Must have some utility; not against public policy
- **Novel**
 - Must be new; i.e., different from prior art
 - Prior Art/Bar dates
- **Non-Obvious**
 - Subject matter as a whole would not have been obvious at the time to person of ordinary skill in the art
 - (Combination of references)
 - *KSR Int'l Co. v. Teleflex, Inc.*, 2007
- **Disclosure/Enablement**

InnovationAccess performs a prior art search to explore the novelty and obviousness “IP landscape” of the invention.

How does UC decide whether to file a patent application on your disclosed invention?

2. Marketability Analysis

- Understand the technology and the manufacturing process
- Research and understand the market need and the state of market
- Research and understand product life cycle and regulatory environment

If UC files a patent application on the invention...

- ❖ **If UC files a patent application on the invention:**
 - **You may be asked to speak with a patent attorney at a law firm.**
 - **You will be asked to review and comment on the patent application before it is filed (except in cases of rush filings).**
 - **You will not be asked to pay any money. (UC supports the costs and then seeks reimbursement from licensees.)**
 - **You will be asked to sign an assignment form.**
 - **If a provisional application is filed, a non-provisional application must be filed within 12 months to preserve rights.**
 - **There is no guarantee that a patent will issue.**

Where can UC get Patent Rights?

❖ International

- There is no such thing as an “international patent”
- PCT (Patent Cooperation Treaty) – 146 member countries

❖ Regional

- EPO (European Patent Office)

❖ National

- Country-by-country

***Note: Patent laws differ by jurisdiction.**

The
United
States
of
America



**The Director of the United States
Patent and Trademark Office**

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

David J. Kyffos

Director of the United States Patent and Trademark Office

Whew! The patent application is filed...

Once the patent application is filed, it is time to start looking for a company that can develop and commercialize the invention.

1. Draft a Non-Confidential Description (“NCD”)
2. Direct Marketing: Identify and approach target companies (also “Technology Incubation Companies”, VC firms, angel investors). IA may execute confidentiality agreements (CDAs) with companies.
3. Indirect Marketing: Post NCD at online marketing “hub” sites (iBridge, AUTM GTP, UC Davis, UC system); onsite presentations (Tradeshows, conferences); some inventors mention their tech in their blogs or post the NCD on their websites...

Fun fact: Some of the best marketing leads come from our inventors!

InnovationAccess will keep you apprised of industry interest.

(If marketing efforts are unsuccessful, UC may choose to discontinue pursuit of the patent...)

A company wants to license the invention!

❖ UC's licensing guidelines require:

- Reserving rights for academic and non-profit institutions to practice the invention for research and educational purposes.
- Seeking fair consideration
- Fixing specific diligence milestones to ensure that licensee gets a product or service to market in a timely manner.

❖ UC's Patent Policy requires:

- Licensing revenue is first used to reimburse UC for sunk patent costs.
- Remaining revenue is distributed 65% to the campus for reinvestment in research and 35% split equally among inventors.

UC reserves rights to use our inventions



**Uses for
research &
education**



**Humanitarian
uses**



**Uses in
developing world**



**Rights for U.S.
government (Bayh-
Dole Act)**



**Rights to license
other Fields of Use
or other Territories**



**Other 3rd party
obligations (i.e.,
sponsors, MTAs)?**

Technology Transfer Successes!

- ❖ In 1980, the federal government held title to ~ 28,000 patents. Fewer than 5% were licensed to industry for development of commercial products...
- ❖ In 2012, the University of California system alone:
 - Held title to 4,118 issued U.S. patents;
 - Held title to 3,774 issued foreign patents;
 - Managed 11,020 inventions (applications included); and
 - Managed 1,595 active license agreements for utility patent rights and 633 plant licenses.
- ❖ In the last 5 years, 271 start-up companies have been formed around UC technologies...

Top Five Patents at UCD FY 2012 (Year Disclosed)

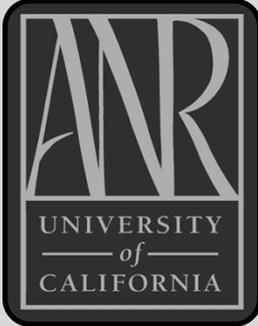
❖ #10	Optical Network Switch (1997)	\$2,403,000
❖ #11	Camarosa Strawberry (1992)	\$2,307,000
❖ #12	Albion Strawberry (2004)	\$1,957,000
❖ #15	San Andreas Strawberry (2008)	\$1,080,000
❖ #20	Ventana Strawberry (2001)	\$614,000

Top Five Patents at UC FY 2012 (Year Disclosed)

❖ # 1	Hepatitis-B Vaccine (SF, 1979 & 1981)	\$13,707,000
❖ # 2	Treatment of Intracranial Aneurysms(LA, 1989)	\$12,644,000
❖ # 3	EGF Receptor Antibodies (SD, 1983)	\$7,925,000
❖ # 4	Bovine Growth Hormone (SF, 1980)	\$5,000,000
❖ # 5	Chromosome Painting (LLNL, 1985, 1989 & 1995)	\$3,620,000

**\$33.1 million in legal and other direct expenses
(patent prosecution and maintenance, interference,
infringement, legal defense, other)**

Contacts



ANR

- Kathleen Nolan, J.D.



UC Davis InnovationAccess

- Nancy Rashid, Ph.D.
- Clinton Neagley, Ph.D., J.D.
- Barbara Boczar, Ph.D., J.D.