How University Researchers Start Companies:

Observations that can…

(1) Guide your transition from postdoc to entrepreneur
&
(2) Help you leverage Berkeley’s innovation ecosystem

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Agenda: Big Picture Perspective (not factoids)

1. Brief Background: HP, HBS, Sun, Mips, Silicon Graphics, Netpulse, PD, Cal

2. How University People Start Companies
   - Commercialization pathways: the 4Ms
   - Leveraging the ecosystem: uber-founders, co-founders, early employees

3. IP Licensing
   - Catalyzing the commercialization of innovations
   - Managing the risks associated with commercialization

4. Patentable Inventions & Copyrightable Software
   - Disclosing to UC Berkeley
   - Patenting

5. Q & A (but ask questions during the presentation!)
Background: Bio & IPIRA/OTL Role

Education Mission

(HYPER) LOCALIZE
commercialization of innovations from Berkeley research
(i.e. innovation centers for startups & nurturing ecosystem)

Research Mission

ACCELERATE
commercialization of innovations from Berkeley research
(i.e. biz plan competitions & lab-to-market courses)

CATALYZE
commercialization of innovations from Berkeley research
(i.e. license IP)

Service Mission:
(incl. economic vitality & quality-of-life via commercializing UCB innovations)

Vice Chancellor of Research Office

IPIRA/OTL
1-stop shop for interface to industry research partners
(including the local innovation ecosystem)
Background: Research, Concepts & Initiatives

RESEARCH (1)
How Do University Innovations get Commercialized?

RESEARCH (2)
4Ms Framework (morphed, mined, milked, marketed)

RESEARCH (3)
How to Maximize Commercializable University Innovations?

RESEARCH (4)
UC Berkeley esp BEAST
- Total Mission Integration
- Grow, Move, or Die

RESEARCH (5)
City of Berkeley Especially Downtown & West Berkeley

RESEARCH (6)
How to Maximize the Commercializing of University Innovations?

RESEARCH (7)
Exponential Impact of the Hyper-Local Innovation Ecosystem (vs Asymptotic Impact of Systematic Programs)

RESEARCH (8)
UC Berkeley esp BEAST
- Total Mission Integration
- Grow, Move, or Die

RESEARCH (9)
City of Berkeley Especially Downtown & West Berkeley

RESEARCH (10)
- Building Owner Edu Campaign
- East Bay Green Corridor
- Berkeley Skydeck IT Accelerator
- QB3 East Bay Wetlab Incubator
- Berkeley Angel/Mentor Network

CONCEPT (2)
Research-Oriented Approach to Managing University IP

CONCEPT (4)
University Research & Ecosystem Segmentation / Strategy

CONCEPT (5)
Research-Oriented Approach to Managing University IP

CONCEPT (7)
Exponential Impact of the Hyper-Local Innovation Ecosystem (vs Asymptotic Impact of Systematic Programs)

CONCEPT (8)
Uber-Founder or Co-Founder

CONCEPT (9)
City of Berkeley Especially Downtown & West Berkeley

INITIATIVES (10)
- Building Owner Edu Campaign
- East Bay Green Corridor
- Berkeley Skydeck IT Accelerator
- QB3 East Bay Wetlab Incubator
- Berkeley Angel/Mentor Network

START
How Do University Innovations get Commercialized?
Research: How Univ Innovations Get Commercialized?

- **Questions**: How do university innovations get commercialized?
  - Conventional answer is linear (research=>invention=>license =>commercialize)
  - What and/or who catalyzed the commercialization?
  - How are universities involved in the process?
  - How can universities increase innovation commercialization?

- **Answers**:
  - Researched commercialization of >50 UCB & LBNL innovations
  - Research revealed 4 common patterns/pathways
  - Developed a useful framework based on 4 patterns
  - Developed strategies for optimizing the 4 pathways
This is a list of the over 100 start-ups that have leveraged UC Berkeley intellectual property rights (i.e. patentable inventions and copyrightable software) since about the mid 1990s. These start-ups have used UC Berkeley’s intellectual property (IP) rights to strengthen their business plans and thereby improve their prospects for obtaining the venture capital or other funding needed to pursue the commercialization of Berkeley innovations.

Note that this list does not include the numerous start-ups that have commercialized UC Berkeley innovations but did not leverage any UC Berkeley IP rights (because the innovations don’t have associated IP rights – such as UNIX, SPICE, RAID, etc).

<table>
<thead>
<tr>
<th>Acacia Biosciences</th>
<th>DNA Sciences</th>
<th>Libraria</th>
<th>Protiveris</th>
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<td>Adura Technologies</td>
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<td>Light Stage</td>
<td>Q-Chem</td>
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<td>Euclid Media</td>
<td>Lumisphere</td>
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<td>Genocea Biosciences</td>
<td>MicroReactor Systems</td>
<td>Silicon Basin</td>
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<td>Gold Mountain Research</td>
<td>Mimesyn</td>
<td>Silicon BioDevice</td>
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<td>BeThere</td>
<td>Goodguide</td>
<td>Molecular Dynamics</td>
<td>Silicon Clocks</td>
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<td>Biomanagement Group</td>
<td>Harmonic Devices</td>
<td>MOR Innovations</td>
<td>Silicon Genesis</td>
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<td>Bioscale</td>
<td>Covarium/Heath Interactive</td>
<td>NanoGripTech</td>
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<td>Integrated Diagnostics</td>
<td>NanoVasc</td>
<td>Stressmarq Biosciences</td>
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<td>IntelliOne</td>
<td>Neomorphic Software</td>
<td>Sunesis Pharmaceuticals</td>
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<td>International Energy</td>
<td>nPrint</td>
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<td>InVino Sense</td>
<td>OmniOx</td>
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<td>Iris Micromedical</td>
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<td>Cooler</td>
<td>Isatis</td>
<td>ON Diagnostics</td>
<td>TruVideo</td>
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<td>CommandCAD</td>
<td>Joule Biotechnologies</td>
<td>Onix Microsystems</td>
<td>Tularik</td>
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<td>Colusa Software</td>
<td>Juvenon</td>
<td>OnWafer Technologies</td>
<td>Two Blades (Foundation)</td>
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<td>Cyberpac</td>
<td>Kaiwood Technologies</td>
<td>Oswald Green</td>
<td>Urban Scan</td>
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<td>Davis Allergy Research</td>
<td>Kalinex</td>
<td>Photoswitch Biosciences</td>
<td>Ventria Biosciences</td>
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<td>Digital Mosaic Systems</td>
<td>KineMed</td>
<td>Preference Metrics</td>
<td>Videnda</td>
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<td>Discera</td>
<td>Leucadia Technologies</td>
<td>Preference Metrics</td>
<td>Vitapath Genetics</td>
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<td>Wireless Industrial Tech</td>
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<td>Xenometrix</td>
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Framework: 4 Pathways for Commercialization

University-Driven
The extent that the university drives the transition from research to product

- **Market-Driven**
The extent that the market drives the transition from research to product

- **Milked**
  Systematically out of research by corporate collaborators

- **Mined**
  Opportunistically by entrepreneurs (e.g. MBA students) that periodically scour campus

- **Morphed**
  Organically out of research by team member(s)

- **Marketed**
  Methodically to industry by campus (e.g. PI, PR, IPMO, etc)
Framework: 4Ms - **Morphed**, Mined, Milked, Marketed


- **Drivers**:
  - Quantity & Quality of Research
  - Ecosystem: Spin-out vs Blast-out

- **IP**:
  - Some obtain exclusive license to improve biz plan & attract investors
  - Some ignore or abscond with IP
Framework: 4Ms - *Morphed, Mined, Milked, Marketed*

- **Examples:** Adura Tech, Aurora Biofuels, CommandCAD, Euclid Media, MediFuel, NanoRay, nanoPrint
- **Drivers:**
  - Quantity & Quality of Research
  - MBAs, Biz plan comp, OTL mrktg
- **IP:**
  - Many obtain exclusive license to improve biz plan & attract investors
  - Some ignore or abscond with IP
- **Comments:**
  - Pathway with highest growth rate
  - MBAs are the campus’ s EIRs
Framework: 4Ms - *Morphed, Mined, Milked, Marketed*

- **Examples** *(that licensed IP):*
  - Analog Devices, Nueprene (XL Tech), Google, Honeywell, Intel, Berkeley Bionics *(first morphed then milked)*

- **Drivers:**
  - Great sponsored research with optimized terms *(i.e. 1st access, NERF, open source, etc)*
  - Off-campus corporate labs *(i.e. BWRC, Intel, Cadence, Yahoo, Starkey, etc)*

- **IP:**
  - Some jointly own IP
  - Some obtain a license to legally use IP or thwart competitors
  - Some ignore or abscond with IP
Framework: 4Ms - *Morphed, Mined, Milked, Marketed*

- **Examples:** Arkal Medical, Cisco, ClimateCooler, FuelFX, Luminus Devices, Honeywell, Microchip Biotech, Renovis, Sand9, Silicon Basis, Solexel, Vitesse, 3M
- **Drivers:**
  - Quantity & Quality of Research
  - Marketing (i.e. IP Licensing offices, University PR programs, Faculty pubs & ppts, Patent pubs, etc)
- **IP:**
  - Most obtain exclusive license to stay legal, improve BP, attract investment, or thwart competitors
  - Some ignore IP or abscond with IP
- **Comments:** Didn’t get morphed, milked or mined because tech or market too nascent when invented
## 4Ms: Ecosystem of Activities, Programs, Resources

<table>
<thead>
<tr>
<th>Pathways (4Ms)</th>
<th>Activities, Catalysts, Programs, Initiatives</th>
<th>Recent Progressive Approaches</th>
<th>Offices</th>
<th>Ideas &amp; Comments</th>
</tr>
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<tbody>
<tr>
<td><strong>Morphed</strong></td>
<td>• Entrepreneurship classes</td>
<td>• University startup</td>
<td>• CET (CoE)</td>
<td>• SBIR/STTR help center</td>
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<td></td>
<td>• On-campus Incubators</td>
<td>• Incubators &amp; accelerators</td>
<td>• Haas (Lester)</td>
<td>• Berkeley Startup Cluster</td>
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<td>• Entrepreneurial Admissions</td>
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<td>• OTL</td>
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<td>• Entrepreneurial Culture</td>
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<td><strong>Mined</strong></td>
<td>• Entrepreneurial MBA Program (EIRs)</td>
<td>• Cleantech-2-Market Course</td>
<td>• Haas (Lester)</td>
<td>• Berkeley Startup Cluster</td>
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<td>• Biz Plan &amp; Tech Competitions</td>
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<td>• OTL</td>
<td>• Berkeley Center for Growth Companies</td>
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<td>• Research-to-Market Courses (C2M)</td>
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<td>• CoE</td>
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<td>• Seminars &amp; Poster Sessions (YAPS)</td>
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<td>• CITRIS</td>
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<td>• Haas Speaker Series &amp; VC Office Hours</td>
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<td>• QB3</td>
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<td>• Student Clubs (BERC)</td>
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<td><strong>Milked</strong></td>
<td>• Institutional response to RFPs</td>
<td>• Research-Oriented Approach to Managing IP rights (e.g. NERFs, BIP, SRA IP grants, etc)</td>
<td>• VCRO</td>
<td>• Adjacent R&amp;D Office Parks/Buildings</td>
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<td></td>
<td>• Opportunistic PIs</td>
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<td>• IPIRA (IAO &amp; OTL)</td>
<td>• Research Enterprise Marketing</td>
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<td>• Sponsored Research Agreements</td>
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<td>• CoE</td>
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<td>• Visiting Industrial Fellows</td>
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<td>• CITRIS</td>
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<td>• Faculty Consulting &amp; Student Hiring</td>
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<td>• QB3</td>
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<td><strong>Marketed</strong></td>
<td>• Newsletters &amp; Press Releases</td>
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<td>• CoE</td>
<td>• EBGC Customer Cred Program</td>
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<td>• Searchable Web Listings</td>
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<td>• VCRO</td>
<td>• EBGC Cluster Clubs</td>
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<td>• Serial Entrepreneur &amp; VC Discussions</td>
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<td>• OTL</td>
<td>• Email Market</td>
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<td>• Scholarly Publications &amp; Presentations</td>
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<td>• NewsCenter</td>
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Ecosystem Navigation: 3 Approaches

- Founder
  - Uber-Founder
  - Co-Founder
  - Early Employee

University Innovation Ecosystem
3 Approaches: Founder vs Early Employee

**Founder:**
- Conceive or mine for innovations
- Launch company & provide ongoing value
- Lots of control, but very challenging

**Early Employee:**
- Mine for startups
- Help startup grow & succeed
- Still *ground-floor opportunity*

- **Team Formation**
  - Emerging Growth Team
  - Recently Formed
  - None

- **Product Maturity**
  - Conceptualized
  - Prototyped & Tested
  - Proven @ Lab-Scale
3 Approaches: **Uber-Founder vs Co-Founder**

**Co-Founder:**
- Team-up with complementary expertise: tech, biz, sales, mrktg, etc
- But some overlapping knowledge is important

**Uber-Founder:**
- Typically science/tech lead
- Learning business side

**Early Employee:**
- Mine for startups
- Help startup grow & succeed
- Still *ground-floor opportunity*

**Team Formation**

**Emerging Growth Team**

**Recently Formed**

**None**

**Product Maturity**

- Conceptualized
- Prototyped & Tested
- Proven @ Lab-Scale
Ecosystem*: Entrepreneurship Training for Uber-Founders

*Not a comprehensive list; just 1 page of examples

- **Courses**
  - Haas: Cleantech-to-Market (C2M) [ei.haas.berkeley.edu/c2m](http://ei.haas.berkeley.edu/c2m)
  - CoE: Center for Entrepreneurship & Technology [cet.berkeley.edu](http://cet.berkeley.edu)
  - Other: ChemE Product Development Program [cheme.berkeley.edu/PDP](http://cheme.berkeley.edu/PDP)

- **Business Seminar Series**
  - Berkeley Entrepreneurs Forum [entrepreneurship.berkeley.edu/BEF/index.html](http://entrepreneurship.berkeley.edu/BEF/index.html)
  - Best Practice Series [entrepreneurship.berkeley.edu/resources/bestpractices.html](http://entrepreneurship.berkeley.edu/resources/bestpractices.html)
  - QB3 Series [qb3.org/startups/QED-QB3](http://qb3.org/startups/QED-QB3)

- **Workshops & Boot-camps**
  - Bench to Market: Idea Evaluation & Research Commercialization for Scientists
  - See Skydeck website for events
Ecosystem*: Innovation Mining for Founders

*Not a comprehensive list; just 1 page of examples

- Available IP: [IPIRA.berkeley.edu](http://IPIRA.berkeley.edu) “Available Technology”
- Faculty Research: [VCresearch.berkeley.edu/faculty-expertise](http://VCresearch.berkeley.edu/faculty-expertise)
- Information Technology: [CITRIS-UC.org/initiative](http://CITRIS-UC.org/initiative)
- IdeaLabs: [BigIdeas.berkeley.edu/idealabs](http://BigIdeas.berkeley.edu/idealabs)
- Technology Seminar Series:
  - QB3 Series [QB3.org/startups/QED-QB3](http://QB3.org/startups/QED-QB3)
  - LBNL EETD noon-time seminars [EETD-Seminar@dante.lbl.gov](mailto:EETD-Seminar@dante.lbl.gov)
- Clubs:
  - Berkeley Postdoc Entrepreneurs Program [QB3.org/startups/bpep](http://QB3.org/startups/bpep)
  - Nanotech club [nano.berkeley.edu/people/berkeleyClub.html](http://nano.berkeley.edu/people/berkeleyClub.html)
  - Berkeley Energy & Resources Collaborative [BERC.berkeley.edu](http://BERC.berkeley.edu)
Ecosystem*: **Startup Mining for Early Employees**

*Not a comprehensive list; just 1 page of examples

- **Startup & Business Plan Competitions**
  - Berkeley Startup Competition [bplan.berkeley.edu/](http://bplan.berkeley.edu/)
  - Global Social Venture Competition [entrepreneurship.berkeley.edu/business_competitions/gsvc.html](http://entrepreneurship.berkeley.edu/business_competitions/gsvc.html)
  - CET Venture Lab [CET.berkeley.edu/vlab](http://CET.berkeley.edu/vlab)
  - Big Ideas [BigIdeas.berkeley.edu/](http://BigIdeas.berkeley.edu/)
  - Intel Global Challenge at Berkeley [www.entrepreneurshipchallenge.org/](http://www.entrepreneurshipchallenge.org/)

- **Local Startup Cluster Organizations**
  - Berkeley Startup Cluster: [BerkeleyStartupCluster.net](http://BerkeleyStartupCluster.net)
  - East Bay Green Corridor: [EBGreenCorridor.org](http://EBGreenCorridor.org)
Ecosystem*: Resources for Startups

*Not a comprehensive list; just 1 page of examples

- **Startup Accelerators**
  - [Skydeck.berkeley.edu](http://Skydeck.berkeley.edu)
  - [QB3.org/startups/qb3-garage](http://QB3.org/startups/qb3-garage)
  - CITRIS manufacturing accelerator (TBD)

- **Mentor & Angel Investor Networks**
  - Entrepreneurs Corner Office Hours [entrepreneurship.berkeley.edu/students/mentoring.html](http://entrepreneurship.berkeley.edu/students/mentoring.html)
  - Berkeley Angel Network [BerkeleyAngelNetwork.com](http://BerkeleyAngelNetwork.com)
  - East Bay Green Corridor Mentor Program [EBGreenCorridor.org](http://EBGreenCorridor.org)
  - Berkeley Startup Cluster Advisory Committee [BerkeleyStartupCluster.net](http://BerkeleyStartupCluster.net)

- **QB3 Startup In a Box:** [QB3.org/startups/box](http://QB3.org/startups/box)

- **Legal Resources:** [BerkeleyStartupCluster.net/Business-Resources](http://BerkeleyStartupCluster.net/Business-Resources)
**Commercialization: Pathways, IP & Know-How**

- **Morphed** commercialization, by definition, depends on UCB know-how, that is sometimes augmented with UCB IP.
- **Marketed** commercialization usually involves UCB IP but frequently not UCB know-how.
- **Milked** commercialization widely varies in how it involves UCB IP and know-how.
- **Mined** commercialization usually involves a mix of UCB IP & know-how.
IP Licensing: *Top Generating IP (note variety)*

This is a list of 47 UC Berkeley patented inventions and copyrighted software that have generated the most IP licensing revenue for UC Berkeley.

This list doesn’t include patentable inventions and copyrightable software developed at UC Berkeley that did not result in substantial licensing revenue but did create industries, market segments, and large companies – such as UNIX (scientific computing), SPICE (electronic design automation), and RAID (redundant disk storage).

- Transfer primers for genetic analysis
- Spacers for primers in genetic analysis
- Laser confocal fluorescence microscanner
- Capillary confocal fluorescent microscanner
- Calcium primers for genetic analysis
- Search engine software
- Network router scheduling software algo
- Method of transforming barley genotypes
- Irreversible electroporation tissue ablation
- 3D modeling software
- Hydrodynamic transport for RFID mfg
- Gene reporter matrix for drug discovery
- Separation of thin film LEDs
- Monoclonal antibody mouse
- Microfabricated fluidic reactors
- Elimination of DNA artifacts
- Dehalogenation in toxic groundwater
- Improved fluorescence energy transfer
- E.coli detection in water DNA
- Recombination in eucaryotic cells
- Blockade of regulation from CTLA-4 signals
- resonant microstructure
- BMP antagonists / morphogenic proteins
- capillary array micro electronics
- Rotary confocal scanner
- Electrophoresis devices
- Mevalonate biochemical pathway
- Double-gate transistors
- Biosensor using filter & laser
- Tall microstructures
- Scanning micromirrors
- travel probe software algo
- Rejuvenating mitochondria
- Q-chem software
- hybridomas materials
- Identifying mutagenic changes
- Organocatalysis
- Heterologous proteins
- Pavement rehab analysis
- CA4PRS software
- Detection in large doc sets software algo
- Methods for defining cell type
- Genetic markers breast/ovarian cancer
- TLA1 gene in algae for biofuels
- Intracellular delivery vehicles
- In-situ groundwater aquifer
- Treatment to reduce edema
- Capacitorless double-gate DRAM
IP Licensing: UC Berkeley Objectives

Leverage the University’s Intellectual Property (IP) rights to Catalyze (not just facilitate or “transfer technology”):

1) The Commercializing of UC Berkeley Innovations – quickly & broadly to:
   - Benefit the regional economy & society at large
   - Fund research & education on campus
   - Reward researchers for their ingenuity*

2) The Funding of UC Berkeley Research by –
   Reconciling the IP needs of sponsors with the IP policies of the University

* Depending on the circumstances, inventor rewards can vary and for example range from licensing income (typically 35%), to attribution and recognition, to the personal satisfaction of developing technology that has been successfully commercialized.
IP Licensing: Commercialization Challenges

Potential **Return** on Investment

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<th>Low</th>
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<td>Low</td>
<td>High</td>
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**Risk** of Investment Required to Try to Commercialize Technology

- **Commercialized UC Berkeley Technologies**
- **Orphaned UC Berkeley Technologies**

8/10/12
UC Berkeley Innovation Commercialization
Risk of Investment Required to Try to Commercialize Technology

<table>
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<tr>
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<tr>
<td>Low</td>
<td>Low</td>
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<tr>
<td>High</td>
<td>High</td>
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License to RAISE RETURNS
- Improve biz plan & attract investment
- Power to exclude competitors
- Freedom to operate without infringement

License to REMOVE RESTRAINTS
- Non-exclusive, royalty free
- Public domain
- Open software

License to REWARD RESEARCHERS
- Can motivate researchers to continue innovating
- Exclusive or non-exclusive with or without field-of-use demarcations
IP Licensing: Value to Companies

Exclusive License

1. Used as competitive barrier & thereby improves return on (risky) investment
   - New feature, point-product, product-line, or multi-segment product family
   - Conducive to startup, midsize or large company

2. Used to impress investors & thereby improve funding, acquisitions, valuation
   - IP on which start-up is founded
   - IP that strengthens portfolio of emerging growth company or established company

3. Used (with know-how, etc) to implement sublicense solution (fab-less IC corp)

4. Used (with other IP) to cross-license with competitors & gain freedom-to-operate

5. Used to discourage infringement claims & thereby lower company’s legal costs

6. Used (with other IP) to promote industry standard

7. Used to prevent companies from nefariously controlling technology’s market

Non-Exclusive License
IP Licensing: Overview of IP Agreements

- **Purpose**: Legal agreement in which licensor gives licensee the right to use the licensor’s patented technology or copyrightable software (note that IP is not sold)

- **Types**
  - License agreement (decades) vs option agreement (years) vs letter agreement (months)
  - Patent rights vs copyrights vs data rights licenses
  - Exclusive vs Non-exclusive
  - Field-of-use demarcation, sublicensing, etc

- **Terms**
  - **Financial**: royalties, license fees, patent costs, etc
  - **Legal**: Warranties, indemnification, confidentiality
  - **Operational**: Performance milestones (require progress or the license can be terminated)

- **Price (royalty rate, fees, etc)**
  - **Nature of IP**: revolutionary vs incremental / method vs device
  - **Risks to commercialize IP**: time, capital, regulatory, etc
  - **Economics of IP’s market**: pharmaceuticals, semiconductors, software, energy
IP Licensing: Common Steps*

- Objectives: commercialize IP broadly, quickly, beneficially
- Challenges
  - Manage uncertainty & risk of commercial success
  - Understand & reconcile different perspectives (corps, inventors, univ)
- Approach
  - Entrepreneurial (flexible, creative)
  - Principled (win-win)
  - Transparent (no conflicts of interests)
- Process: Incremental
IP Licensing: Managing Risk

*Risks decrease as technology is developed into products*
IP Licensing: Commitment = f (Risk)

Commitment incrementally increases as risk decreases

- Confidential Agreement
  - Comm Plan
  - Patent Costs
  + below

- Annual Fee
- Diligence Terms
+ below

- Issue Fee (& equity)
- Earned Royalties
- Min Annual Royalties
- Indemnification
+ below

Partner Commitment

Market IP
Evaluate Opportunity
Letter Agreement
Option Agreement
License Agreement

Common Steps (simplified)
IP Licensing: Complexity

Relationship Complexity

Complexity incrementally increases as commitments increase & risks decrease

Market IP

Evaluate Opportunity

Letter Agreement

Option Agreement

License Agreement

Common Steps (simplified)

• 1-Page Doc
  • 1-Page Doc
  • 3-6 Month Term
  • If no extraordinary issues, then can be completed within 30 days

• 2-Page Doc
  • 2-Page Doc
  • 3-6 Month Term
  • If no extraordinary issues, then can be completed in 30-60 days

• 10-Page Doc
  • 10-Page Doc
  • 1-2 Year Term
  • If no extraordinary issues, then can be completed in 30-60 days

• 30-Page Doc
  • Patent Life is Term
  • If no extraordinary issues, then can be completed in 30-90 days
Patents: Overview of IP

- **Intellectual Property (IP):** Includes patents, copyrights, trademarks, trade secrets
  - Patentable invention is a new & useful process, machine, article of manufacture, or composition of matter
  - Copyrightable work protects the expression of an original work of authorship (i.e. software)
  - UC Berkeley doesn’t keep trade secrets
  - Researchers own their know-how

- **Purpose:** A patent is a legal monopoly that gives the patent owner the right to exclude others from making, using, or selling an invention for a limited time (20y)

- **Creation:** Patents & copyrights granted & enforced by governmental authorities in each country (in return for full disclosure of inventions to enrich public knowledge)

- **Timing:** A US patent must be filed within a year after the invention has been publicly disclosed; & most international patents must be filed before the invention is publicly disclosed; a patent *filing* is not a patent; it can take 1-3+ years for a patent to *issue*; once issued the patent term is 20 years from the *filing* date

- **Costs:** **Utility** US filing-only can cost > $15K, & international patent filings are even more expensive (translation charges, etc); **Provisional** US filing can cost ~$1K

- **Value:** It’s not difficult to get a patent, but it’s challenging to get a useful patent
Invention & SW Disclosures: Responsibilities

Disclosures Required By

- Many funding agreements -- especially US Government funding
- Note that UC employees own their own “know-how”

Disclosure Forms Purpose (not a useless bureaucratic exercise)

- Describe specific invention to clarify novelty & value (i.e. patentability)
- List funding source(s) to check for encumbrances & obligations related to patent rights
- List public enabling disclosure(s) to determine patent deadlines (bar dates)
- List inventorship to determine ownership, distribution of proceeds, patenting help, etc

Inventorship on Disclosure Form

- If contributed to 1 claim, then co-inventor on patent (this is law not UC policy)
- Can change from disclosure to patent depending in claims in actual patent issued
- If co-inventor from another university or company, then IP jointly owned
  - Each owner has rights to the entire patent rights
  - Often joint owners establish an agreement on how to collaboratively manage IP
Invention & SW Disclosures: Opportunities

- **UCB inventors (hired after 1997)**
  - Get 35% of licensing proceeds (after costs)
  - Proceeds split evenly among co-inventors unless another split is agreed to in writing

- **UCB researchers that spin-out companies can license patent rights**
  - Inventors have the most know-how to commercialize inventions
  - Therefore inventor start-ups are best candidates to meet objectives of exclusive license

- **Ownership of IP**
  - Invention disclosure doesn’t automatically give title to UC
  - UC owns if (a) use UC resources, (b) fund via UC, or (c) scope of employment with UC
  - Inventors can request UC DISCLAIM or WAIVE ownership of invention
  - If in doubt about ownership, then it’s better to disclose invention to UCB OTL

- **If UCB doesn’t want to pursue patent for an invention, then**
  - Funding agency can pursue the patent
  - If funding agency doesn’t want to pursue patent, then inventors can pursue patent
Invention Disclosures:  **Statistics** *(not to scale)*

- Know-how
- Disclosures (continued)
- Patents
- Licenses
- Products
- Revenue

Know-how

Disclosures (continued)

Patents

Licenses

Products

Revenue
Summary & Questions

Key points
- Commercialization pathways: *morphed, mined, milked, marketed*
- Leverage ecosystem: *uber-founder, co-founder, early employee*
- Leverage IP rights to catalyze commercialization

Follow up
- [http://IPIRA.berkeley.edu](http://IPIRA.berkeley.edu)
- Mike Cohen; mike.c@berkeley.edu