Commercializing UC Berkeley Technology via the University’s Innovation Ecosystem

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Goals: Big Picture Perspective (not factoids)

1. Guide your transition from grad student to entrepreneur
2. Help you leverage Berkeley’s innovation ecosystem
3. Familiarize you with licensing, patenting & disclosing IP
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, spin-outs vs blast-outs
   - 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

Research Mission

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

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)
Innovation Commercialization: Research, Concepts & Initiatives

**RESEARCH (1)**
How Do University Innovations get Commercialized?

**CONCEPT (2)**
4Ms Framework (morphed, mined, milked, marketed)

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

**CONCEPT (6)**
How to Maximize Commercializable University Innovations?

**CONCEPT (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

**CONCEPT (11)**
University Spin-out vs Blast-out; Uber-Founder vs Co-Founder

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

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

**RESEARCH (3)**
How to Maximize Commercializable University Innovations?

**RESEARCH (10)**
UC Berkeley esp BEAST
- Total Mission Integration
- Grow, Move, or Die

**CONCEPT (1)**
Start-Up: University Spin-out vs Blast-out; Uber-Founder vs Co-Founder
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
Research: Partial List of >100 Start-ups (with IP Rights)

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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<tr>
<td>Adura Technologies</td>
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<td>Light Stage</td>
<td>Q-Chem</td>
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<td>Alien Technologies</td>
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<td>Rubicon Digital Mapping</td>
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<td>Fluxion Biosciences</td>
<td>Micro Climates / Aptility</td>
<td>Secured Streams</td>
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<td>Fuel FX</td>
<td>MicroFab Biosystems</td>
<td>SenSys Networks</td>
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<td>Genocea Biosciences</td>
<td>MicroReactor Systems</td>
<td>Silicon Basis</td>
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<td>Gold Mountain Research</td>
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<td>Silicon BioDevice</td>
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<td>BeThere</td>
<td>Goodguide</td>
<td>Module Video</td>
<td>Silicon Clocks</td>
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<td>Harmonic Devices</td>
<td>Molecular Dynamics</td>
<td>Silicon Genesis</td>
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<td>Bioscale</td>
<td>Covarium/Heath Interactive</td>
<td>MOR Innovations</td>
<td>Simelix</td>
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<td>BPS</td>
<td>HFTA</td>
<td>NanoGripTech</td>
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<td>NanoNerve</td>
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<td>Stressmarq Biosciences</td>
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<td>Isatis</td>
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<td>Joule Biotechnologies</td>
<td>ON Diagnostics</td>
<td>Tularik</td>
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<td>Juvenon</td>
<td>Onix Microsystems</td>
<td>Two Blades (Foundation)</td>
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<td>OnWafer Technologies</td>
<td>Urban Scan</td>
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<td>Kalinex</td>
<td>Oswald Green</td>
<td>Ventria Biosciences</td>
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<td>KineMed</td>
<td>Photoswitch Biosciences</td>
<td>Videnda</td>
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Framework: 4 Pathways for Commercialization

**University-Driven**
*The extent that the university 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)

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

- Milked
  - Systematically out of research by corporate research sponsor
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>
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</table>
| Morphed        | • Entrepreneurship classes  
                  • On-campus Incubators  
                  • Entrepreneurial Admissions  
                  • Entrepreneurial Culture  | • University startup  
                                      • Incubators & accelerators  | • CET (CoE)  
                                      • Haas (Lester)  
                                      • OTL  | SBIR/STTR help center  
                                      • Berkeley Startup Cluster |
| Mined          | • Entrepreneurial MBA Program (EIRs)  
                  • Biz Plan & Tech Competitions  
                  • Research-to-Market Courses (C2M)  
                  • Seminars & Poster Sessions (YAPS)  
                  • Haas Speaker Series & VC Office Hours  | • Cleantech-2-Market Course  | • Haas (Lester)  
                                      • OTL  
                                      • CoE  
                                      • CITRIS  
                                      • QB3  
                                      • Student Clubs (BERC)  | Berkeley Startup Cluster  
                                      • Berkeley Center for Growth Companies |
| Milked         | • Institutional response to RFPs  
                  • Opportunistic PIs  
                  • Sponsored Research Agreements  
                  • Visiting Industrial Fellows  
                  • Faculty Consulting & Student Hiring  | • Research-Oriented Approach to Managing IP rights (e.g. NERFs, BIP, SRA IP grants, etc)  | • VCRO  
                                      • IPIRA (IAO & OTL)  
                                      • CoE  
                                      • CITRIS  
                                      • QB3  | Adjacent R&D Office Parks/Buildings  
                                      • Research Enterprise Marketing |
| Marketed       | • Newsletters & Press Releases  
                  • Searchable Web Listings  
                  • Serial Entrepreneur & VC Discussions  
                  • Scholarly Publications & Presentations  | •  | • CoE  
                                      • VCRO  
                                      • OTL  
                                      • NewsCenter  | EBGC Customer Cred Program  
                                      • EBGC Cluster Clubs  
                                      • Email Mrktg |

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UC Berkeley Innovation Commercialization  
10/18/12
Ecosystem Navigation: 3 Approaches

University Innovation Ecosystem

Founder
  - Uber-Founder
  - Co-Founder
  - Early Employee
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 Team
- None

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

**Team Formation**

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

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

**None**
- **Early Employee:**
  - Mine for startups
  - Help startup grow & succeed
  - Still *ground-floor opportunity*

**Product Maturity**
- Conceptualized
- Prototyped & Tested
- Proven @ Lab-Scale

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UC Berkeley Innovation Commercialization
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](http://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

- **High**
- **Low**

**Risk** of Investment Required to Try to Commercialize Technology

- **High**
- **Low**

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

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UC Berkeley Innovation Commercialization
IP Licensing: Catalyzing Commercialization

Potential **Return** on Investment

- **High**
  - License to **REWARD RESEARCHERS**
    - Can motivate researchers to continue innovating
    - Exclusive or non-exclusive with or without field-of-use demarcations
  - License to **REMOVE RESTRAINTS**
    - Non-exclusive, royalty free
    - Public domain
    - Open software
  - License to **RAISE RETURNS**
    - Improve biz plan & attract investment
    - Power to exclude competitors
    - Freedom to operate without infringement

- **Low**

Risk of Investment Required to Try to Commercialize Technology

- **Low**
- **High**
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
   - Can be very helpful to startups, but often only marginally helpful to large companies
2. Used to impress investors & thereby improve funding, acquisitions, valuation
   - IP on which start-up is founded
   - Can be very helpful to startups, but often only marginally helpful to large companies
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

Common Steps

Market IP
Evaluate Opportunity
Letter Agreement
Option Agreement
License Agreement

(*simplified)
IP Licensing: Managing Risk

Risks decrease as technology is developed into products

Risk

Time
IP Licensing: $Commitment = f (Risk)$

- Partner Commitment

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

Common Steps (simplified)

Market IP
Evaluate Opportunity
Letter Agreement
Option Agreement
License Agreement

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UC Berkeley Innovation Commercialization
IP Licensing: Complexity

Complexity incrementally increases as commitments increase & risks decrease

- 1-Page Doc
- 2-Page Doc
- 10-Page Doc
- 30-Page Doc
- Market IP
- Evaluate Opportunity
- Letter Agreement
- Option Agreement
- License Agreement

- 3-6 Month Term
- 1-2 Year Term
- Patent Life is Term
- If no extraordinary issues, then can be completed within 30 days
- If no extraordinary issues, then can be completed in 30-60 days
- 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
- 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
Research: 4Ms Activity & Program - Segmentation

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

High

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

Moderate

High

Moderate

Systematic via Programs & Practices
- Searchable web listings
- Proactive marketing
- Biz plan competitions
- Lab-to-market courses
- Events & poster sessions
- IP rights agreements, etc

Organic via Innovation Ecosystem
- Startups & Established Corps
- Startup incubators
- Tech vets & entrepreneurs
- Early stage investors
- Vet, Mentor, Staff, Fund, Partner, etc
Research: **Systematic + Organic / Asymptotic v Exponential**

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

- High
- Moderate

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

- High
- Moderate

**Systematic via Programs & Practices**
- Searchable web listings
- Proactive marketing
- Biz plan competitions
- Lab-to-market courses
- Events & poster sessions
- IP rights agreements, etc

**Organic via Hyper-Local Innovation Ecosystem**
- Startups & Established Corps
- Startup incubators
- Tech vets & entrepreneurs
- Early stage investors
- Vet, Mentor, Staff, Fund, Partner, etc

**Contrived**
- Incorporating
- Branding (logos)
- Housing
- Capitalizing
- Quasi-Staffing

* Suboptimal use of funding & resources
* Can’t force winners
* Baby vs facilitate entrepreneurs