Introduction to CTV

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Many Ways for Innovation to Flow Out From Universities

- Publications
- Student internships & jobs
- Faculty consulting
- Collaborations
- Sponsored research
- Licensing
- Start-ups

Not the University’s primary focus, but the focus for today’s talk
Where Do Universities Play in This Space


~$809B in Research funding

~320,000 invention disclosures

$2.5M / disclosure

55%

~175,000 patent applications

40%

~70,000 patents awarded

37,349 active license & options,
9,261 start-ups,
130+ new drugs & devices,
300,000+ new jobs

Source: AUTM Licensing Surveys (FY91 - FY14)
But the End of One Process is Just the Beginning of Another

University’s Funnel

Only 1 in 6 inventions ever gets licensed

Industry / VC’s Funnel

Roughly 1 in 100 pharma compounds gets approved

Roughly 1 in 10 venture investments is a significant hit

Successful product on the market
Commercial Success is Not Easy

155 U.S. Universities – Gross Tech Transfer Revenue

($M)

Source: AUTM 2014 Survey Data
## Who Else Does Well, Commercially?

### Gross Licensing Revenue (FY14)

<table>
<thead>
<tr>
<th>Institution</th>
<th>License Rev ($M)</th>
<th>Research base ($M)</th>
<th>Inventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwestern</td>
<td>$361</td>
<td>$497</td>
<td>208</td>
</tr>
<tr>
<td>NYU</td>
<td>$216</td>
<td>$524</td>
<td>173</td>
</tr>
<tr>
<td>Columbia</td>
<td>$175</td>
<td>$749</td>
<td>387</td>
</tr>
<tr>
<td>Princeton</td>
<td>$143</td>
<td>$200</td>
<td>106</td>
</tr>
<tr>
<td>California System</td>
<td>$115</td>
<td>$5,065</td>
<td>1,646</td>
</tr>
<tr>
<td>Stanford</td>
<td>$109</td>
<td>$887</td>
<td>481</td>
</tr>
<tr>
<td>U Washington</td>
<td>$105</td>
<td>$1,187</td>
<td>421</td>
</tr>
<tr>
<td>Utah</td>
<td>$77</td>
<td>$389</td>
<td>179</td>
</tr>
<tr>
<td>MIT</td>
<td>$68</td>
<td>$1,521</td>
<td>743</td>
</tr>
<tr>
<td>Texas System</td>
<td>$53</td>
<td>$2,573</td>
<td>830</td>
</tr>
</tbody>
</table>

### Gross Licensing Revenue (Cumulative FY05 – FY14)

- **NYU**: $Billions
- **Columbia**: $Billions
- **MIT**: $Billions
- **Stanford**: $Billions
- **CalTech**: $Billions
- **U Penn**: $Billions
- **Harvard**: $Billions
- **Johns Hopkins**: $Billions
- **Cornell**: $Billions

Source: AUTM STATT database (Columbia #s adjusted for FY05 – 06, which were not reported to AUTM)
Columbia’s Tech Transfer Mission

TO FACILITATE
the translation of academic research into practical applications, for the benefit of society on a local, national and global basis. To do so at market-rate terms in order

TO SUPPORT
research, education and teaching at Columbia by generating funding for the University and facilitating partners with industry where appropriate

TO EDUCATE AND SERVE
as a resource for the Columbia community on matters relating to entrepreneurship, intellectual property, and technology commercialization
Columbia Tech Ventures at a Glance

~400 new inventions from Columbia research each year

Columbia Technology Ventures

100+ licenses & options

15+ start-up companies

Millions in licensing revenue
Many Other Universities Also Strong in Tech Transfer

AUTM FY14 Data (plus Columbia’s FY15 data), “Peer” Universities, Adjusted For Size ($Research Expenditures$)
Products Using Columbia Technology
University Policy On Distribution of License Revenues

Gross Revenue
First $125K

Inventor: 40%
Inventor's Lab: 20%
Tech Ventures: 20%
University: 20%

Gross Revenues
Over $125K

Inventor's Lab: 20%
Tech Ventures: 20%
University: 20%
School: 26%
Department: 7%

Note: Certain caps and deductions may apply. Please refer to Appendix D of the Faculty Handbook for details.
“IP may be important to startups…but increasingly, startups are even more important to IP”

Marc Singer,
Osage University Partners

Over Half of Columbia’s Exclusive Licenses are Now to Startups!
An Explosion Of Startups @ CTV
Over Half of CTV’s Exclusive Licenses Are Now to Startups

Health Analytics

Intelligent Bio-Systems
A QIAGEN company

Genia

Communications & Devices

System Management ARTS (SMARTS)

Lumiode light engines

CounterPath

Neural Decisions de Cerv

Seamless semi

Emergent communications

Cellrox

Cybersecurity & Corporate Computing

Pharma & Devices

mesoblast

EpiBone

Aton Pharma

Alkeus Pharmaceuticals INC.

Kallyope

Sapience therapeutics

Kras therapeutics

Pharmacopeia

Armgo Pharma, Inc.

Media & Fashion

Vidrovr

Thunderivy

MPEG LA

Cleantech

Radiator Labs
CTV is Just One Part of the Broader Columbia Entrepreneurship and Innovation Ecosystem
http://entrepreneurship.columbia.edu
Trying to Make Life Better for Columbia & NYC Startups: Current CTV Initiatives (w/ Columbia Peers)

- Expanded Executive-in-Residence and Executive Advisory Network programs
- Launching Academic Venture Exchange (merged EIR programs across Ivy League, MIT, Stanford)
- Support from CTV Graduate Student Fellows
- Connecting startups to venture investors

- Standardized startup-friendly IP licensing deals
- Discounted & deferred rates for outside counsel & insurance providers
- Encouraging early collaboration with COI

- Lectures & events on campus (live & video)
- *Intellectual Property for Entrepreneurs* class
- *Hacking for Energy* class (Spring 2017)
CTV’s FY17 Executives in Residence

Charles Goldstein
Becton Dickinson, Millipore

Deb Zajac
GE Ventures, GE Research

Randall Kaye
Avanir, J&J, Axsome Therapeutics

Linda Dujack
J&J, FDA

Arikha Moses
Galatea Surgical, TyRx Pharma

Mahmoud Mahmoudian
Merck, Ferring
CTV's Executive Advisory Network (XAN)

- Kristen Morrissey Thiede
  *Area of expertise:* Tech, Energy
  *Starr, Google*

- Laura Smoliar
  *Area of expertise:* Tech, Energy
  *Managing Director, Global Innovation Foundry*

- Keith Lenden
  *Area of expertise:* Biomedical
  *Golgi Therapeutics, Abide Therapeutics, Receptos*

- James Chou
  *Area of expertise:* Tech, Energy
  *Work Market, Shutterstock, American Greetings Interactive*

- Ehud Geller
  *Area of expertise:* Biomedical
  *Medica Partners, Ikapharm, Interpharm, Teva Pharmaceuticals Group*

- Greg Blonder
  *Area of expertise:* Tech, Energy
  *AT&T, AT&T Ventures, Margenthaler Ventures*

- Chaki Ng
  *Area of expertise:* Tech, Energy
  *Viacom, MTV, VH1 and CMT*

- Mark Pinney
  *Area of expertise:* Tech, Energy
  *Vimeo, AOL, Magnific, Tremor Video, Tacoda, Acorda Therapeutics, Caregene and Embol-X*

*Plus all former XIRs, and more members to be added*
Launching Academic Venture Exchange (AVX)

$2M in venture philanthropy!
What Does A Technology Transfer Office Do?

- Invention Disclosure
- Assessment & Triage
- Patenting
- Marketing
- Agreements
- Post-Deal Compliance

- Licenses & options
- Equity start-ups
- Industry Sponsored Research Agreements
- “Gateway” Agreements (material transfer, confidentiality)
The Path to The Deal

Discovery
- Date of Conception
- Inventorship
- Record of Conception

Invention Report Filed
- Goal and expectations

Invention/ IP Analysis
- Prior Art
- Uniqueness
- Inventors Goals
- TTO resources

Commercial Analysis
- Development stage
- Market size
- Marketing challenges
- Inventor participation
- Ongoing research
- Enforceability

Patenting
- Proof of principle
- Continued development

Marketing
- Inventor’s contacts

Negotiation & close
- Legal & compliance issues
Want to Learn More?

2. Sign up for our mailing list
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Thank you!

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Columbia_Tech