# Management of University IP and Social Welfare: Brief Research Overview

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# IP in Context

- How does university research affect industrial R&D or innovation and venture formation?
  - Not primarily via patents
  - Key channels affecting R&D of est'd firms
    - Publications
    - Public meetings/Conferences
    - Informal interaction
    - Consulting
  - And, for licensing, deals with est'd firms much more important than deals leading to venture creation.
  - So?
    - Practices and policies that impair public disclosure

# Differences

- Across technologies and industries
  - Biomedicine is unusual
    - Closeness of commercial sphere
    - Patents work here relative to other industries
  - Impacts of academic research on other industries and sectors still not well understood
- Over time
  - Has Bayh-Dole spawned growth of academic patenting?
    - Probably, but maybe not as much as it appears

# The actors

- In thinking about impacts of university mgt. of IP, consider impacts on:
  - Established firms
    - Via market-mediated channels (e.g., licensing)
    - R&D spillovers
  - New venture formation
  - Academic actors
    - Faculty and research
    - Administrations

# How to think about the decisions and practices of each?

- Established firms and new ventures
  - Costs and benefits of both market-based ties and associated spillover effects
- Academic sector
  - Effects on faculty and researchers'
    - Goals and incentives
    - Cost and benefits of doing research
  - Administrations
    - Goals (e.g., Advance knowledge or make money?)
    - Costs and benefits (e.g., Institutional support, costs of TTO, etc.)

# Established firms: Costs and benefits of acquiring university IP

- Benefits
  - Low rate of commercial success (T&T); unsurprising since most is early stage
- Costs
  - Direct costs
    - Licensing and other fees
    - Negotiations: Time and expense
  - Suggestion that these are growing, affecting both licensing and industry support
- Appropriability:
  - Exclusive and nonexclusive rights
    - Terms vary across technologies (Mowery)
    - Exclusivity often not necessary for commercialization of many inventions (T&T)

# Established firms: Academic Spillovers

- Important (Adams, Jaffe, Narin, etc.)
  - Productivity, citation and survey-based analyses
    - Suggests importance
- Question of role of geographic proximity (with implications for regional development)
- Considerable lags
    - Can be 10-20 years or more
- Key question: Has Bayh-Dole shrunk the “public domain” of academic research?
  - Lags in patent citations to university patents may be lengthening

# Effects on faculty research

- Faculty goals
  - Has Bayh-Dole led to change in faculty motives over time?
    - Not known
  - Project selection: Movement toward more applied and commercially relevant research due to Bayh-Dole?
    - Appears not to be the case for faculty
    - Institutionally versus individuals
      - Translational medicine (But due to Bayh Dole?)

# Effects on faculty research

- Effect of Bayh Dole on research costs via its effect on access to:
  - Knowledge
  - Materials
  - Students
  - Funding
- Productivity
  - Little evidence of impact of more intensive patenting activity on research productivity

# Disclosure and access

- Faculty practices regarding disclosure affect costs of others' conducting research
- Restricting access to ***published*** research by assertion of IP?
    - Very little in biomedicine
    - Other researchers pay little attention to IP on research tools in biomedicine when they do research
  - Greater secrecy around what gets disclosed to begin with?
    - Due to IP and prospect of commercialization?
      - Maybe, but not known
    - Due to conditions demanded by industry sponsors?
      - Universities are sometimes willing

# Materials?

- In biomedicine, restricted access more of a concern here
  - More due to scientific competition, not IP
- MTA's
  - Requests for MTA's associated with greater, not less access in biomedicine
    - Shows willingness to deal

# TTO management and practices

- Practices and efficiency appear to be improving, though research results variable
- TTO's focus more on existing firms
- Cash positive for a minority of universities, though may be improving
- Can be source of faculty (and company) frictions
- Selected university policies have a positive effect
  - Increase faculty share in earnings
  - University staking up-front filing and other legal costs in exchange for equity share
- Key to licensing success: Ongoing faculty participation