Grand Challenge Process & IP/Commercialization: What is it? Why is it?

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UM Innovations Move and Improve the World

Mobility

Cybersecurity

OLED Display

AI / Edge Computing

Bladeless Lasik

Ultra Low Power Computing

FluMist Vaccine

Therapeutics for Rare Disease
Important Innovations from Other Universities

- **Google**, Stanford Univ.
- **HIV anti-viral therapies**, Emory Univ.
- **Rocket fuel**, Clark Univ.
- **Insulin**, Univ. of Toronto
- **Vitamin D fortification**, Univ. of Wisc.
- **Electron microscope**, Uni. of Toronto
- **Penicillin**, Oxford Univ.
- **Pap Smear**, Cornell Univ.
- **Blood preservation**, Columbia Univ.
- **Ultrasound**, Univ. of Vienna
- **Streptomycin**, Rutgers Univ.
- **Heart-Lung machine**, Univ. of MN

- **Polio vaccine**, Univ. of Pittsburgh
- **Pacemaker**, Univ. of Minnesota
- **Warfarin**, Univ. of Wisconsin
- **Seatbelt**, Univ. of Minnesota
- **Hepatitis B vaccine**, Univ. of Pennsylvania
- **CAT scan**, Georgetown
- **MRI**, State Univ. of New York
- **Recombinant DNA Technology**, Stanford Univ., UC San Francisco
- **mRNA vaccine delivery**, Univ. of Penn
Impact and Importance

• University commercialization of federally sponsored research is hugely important to federal agencies
  • Mandated by Congress in 1980 (Bayh-Dole Act)
  • Closes the loop on taxpayer investment in university research

• University of Michigan has vast support network
  • Innovation Partnerships
    • Licensing, Venture Center, Alliances
  • Fast Forward Medical Innovation
  • Center for Entrepreneurship
  • Coulter Translational Research Partnership Program
  • Michigan Drug Discovery
  • Weil Institute
  • Support from University leadership at every level
What is Intellectual Property?

• IP includes
  • Utility patents
  • Design patents
  • Plant patents
  • Plant Variety Protection certificates
  • Copyrights
  • Trademarks, servicemarks
  • Trade secrets
  • Know-how, technical information

• IP can protect
  • Compositions of matter, formulations
  • Devices, methods, algorithms
  • Therapeutics, diagnostics, instruments
  • Sexually and asexually reproduced plants
  • Software, designs, written works, any artistic expression in a fixed medium
  • Symbols, names, slogans used in commerce
  • Secrets, knowledge
Intellectual Property Helps Bridge the Gap

University research output
- Innovative, extraordinarily creative
- Discovery-based, fundamental
- Early, proof-of-concept

Commercial products and services
- Effective, proven, reproducible
- Safe, reliable
- Scalable
- Profitable

- Significant investment required to turn research output into a commercial product!
  - Requires millions to 100’s of millions of $$$

- Intellectual property helps assure stakeholders that investment is worthwhile
  - Carrot for companies, entrepreneurs, investors
  - Sustainable market advantage allows for commercial successes and recouping of investment
Commercialization Pathway

1. **Basic Research** (University led)
2. **Translational Research** (University led)
3. **Partnering** (Variety of arrangements)
4. **Product Development** (Company led)
5. **Regulatory approvals** (Company led)
6. **Marketing & Sales** (Solely company)

**IMPACT!!**
Commercialization at UM

- Two primary approaches
  - “Direct license” to established company
  - Launch a startup company
  - Pros & cons to each, usually circumstances dictate

- License rather than sell the IP
  - Provides UM with greater control over outcome
  - Mandated when federal funds involved
  - True of nearly all universities nearly all of the time

- Roles for research team
  - Marketing and initial engagement
  - Sponsored research in UM lab
  - Consulting
  - Founders (startup)
  - Board of advisors (startup)
  - Executive/management role (startup, usually only students and postdocs)

- As product development matures, inventor engagement typically diminishes
Innovation Partnerships in FY 2022

- **Licensing**
  - Invention Disclosures: 433
  - License/Option Agreements: 278
  - Licensing Revenue: $20.4M

- **Ventures**
  - U.S. Patent Applications Filed: 409
  - Patents Issued: 143
  - Startups: 16
  - Raised by Startups: $759.5M
Invention Reports – The First Step

• Why?
  • We can only help if you let us know
  • (Nearly all research grants require it)

• How?
  • Online portal on our website (innovationpartnerships.umich.edu)
  • Short form, upload supporting materials

• When?
  • Before first public disclosure!
  • Earlier is better than later
  • As soon as you can describe the invention in detail

• But I’m not sure...
  • Reach out and talk to us anytime!
  • Use your regular contact, if you have one
  • Or contact me (jernelso@umich.edu) or Ken Spenser (kspenser@umich.edu)
    • Beware of imposters!! 😊
Next Steps

ASSESS
MARKET ANALYSIS
FELLOWS REPORT

DEVELOP
ADVANCE TECHNOLOGY
FEEDBACK

UNLEASH
REDUCE RISK
PARTNER SELECTION
LICENSE
AGREEMENT MANAGEMENT
Questions?

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