

Patents & Intellectual Property

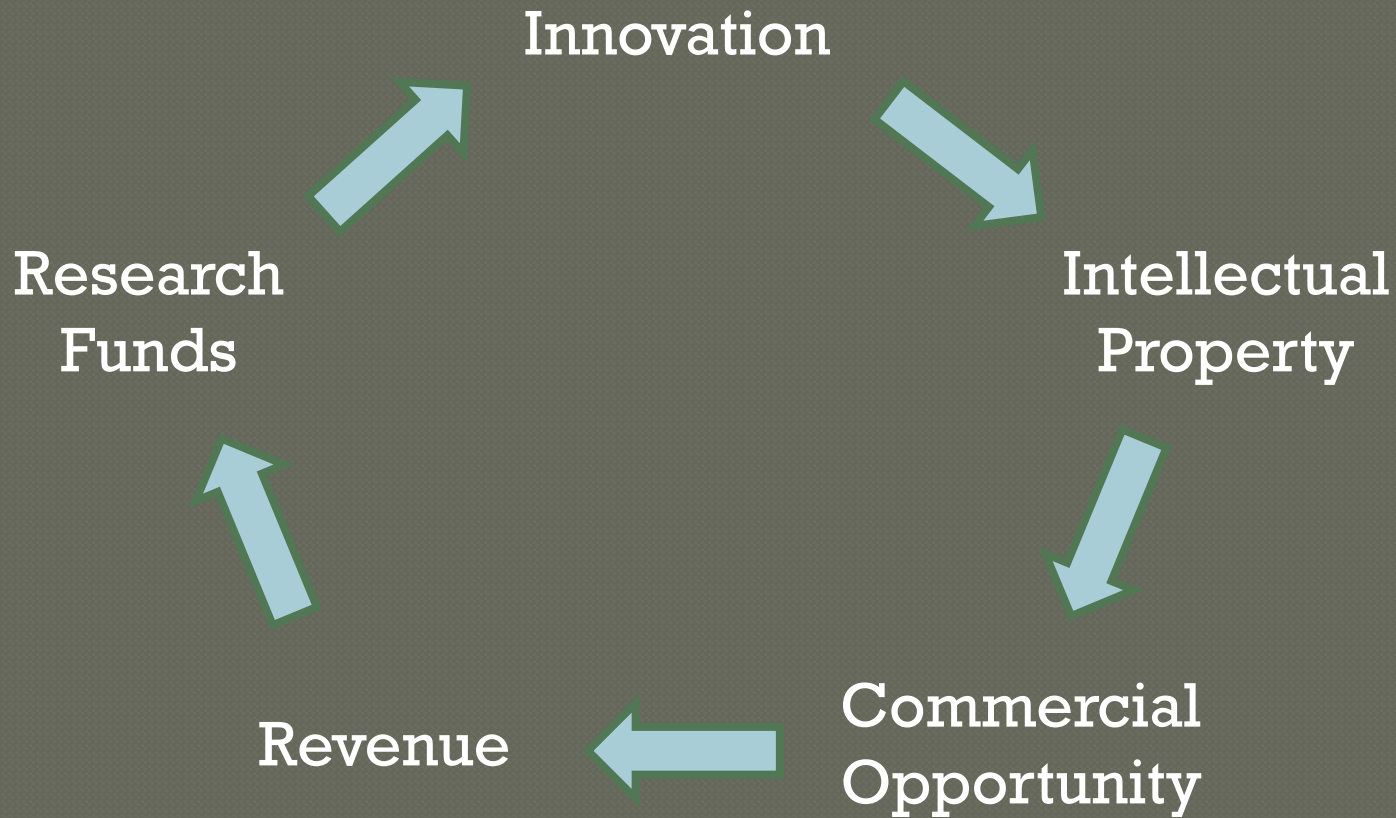
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Office of Licensing & Ventures

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Linking Ideas to Impact

IP Enables a Virtuous Cycle



Agenda

- Intellectual property
- Commercialization
- Office of Licensing & Ventures



Basics of Intellectual Property

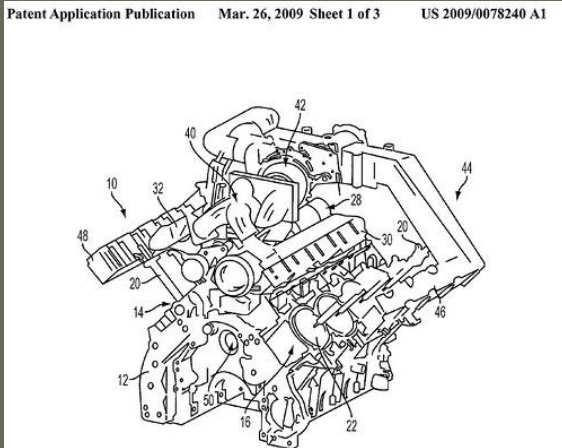
Protecting Innovation



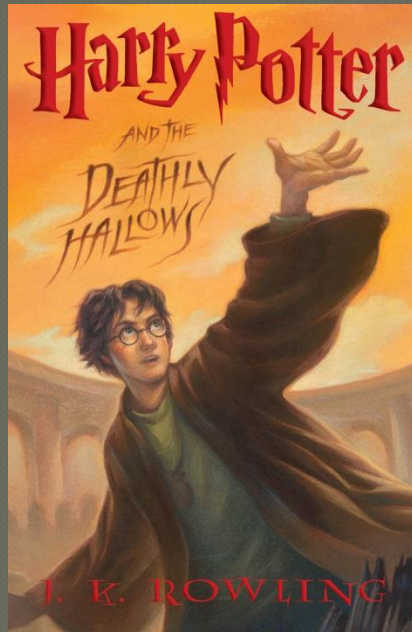
Linking Ideas to Impact

Types of IP Protection

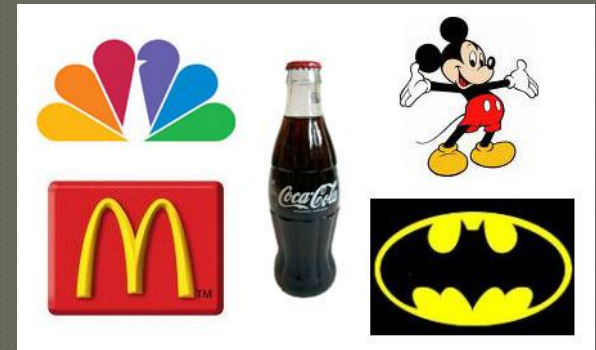
Patent



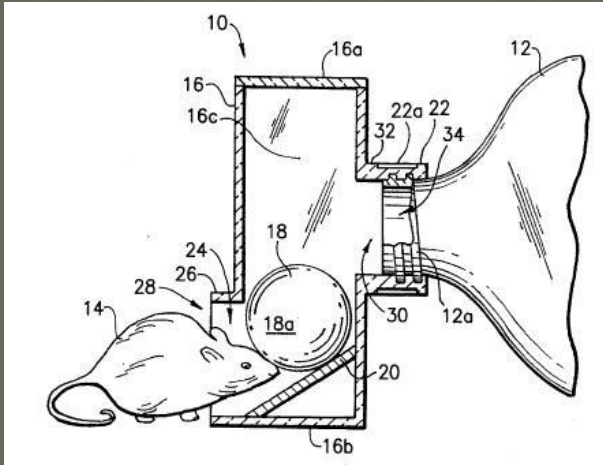
Copyright



Trademark



Patent: Teach the World



- Description of an invention reduced to practice
- Inventor provides: detailed instructions on “how to”
- Government provides: commercial protection



Patentability Criteria

- To be patentable, an invention must be:
 - Novel – some aspect must be new
 - Non-obvious
 - Useful
 - Of patentable subject matter
 - Undisclosed
- When in doubt, let us check it out



Patentable Subject Matter

- Patentable inventions:

- Compositions of matter
- Methods of use
- Methods of making
- Apparatus

- Patent relationships:

- Dominance
- Mutual exclusion



Disclosure and Inventorship

- An invention is disclosed when **enabling information** is:
 - Verbally presented or discussed
 - Put into print
 - Posted online
- An inventor is one who contributes, in an inventive manner, to at least one claim
 - Would the claimed invention exist?
 - Ideas incorporated vs. not incorporated

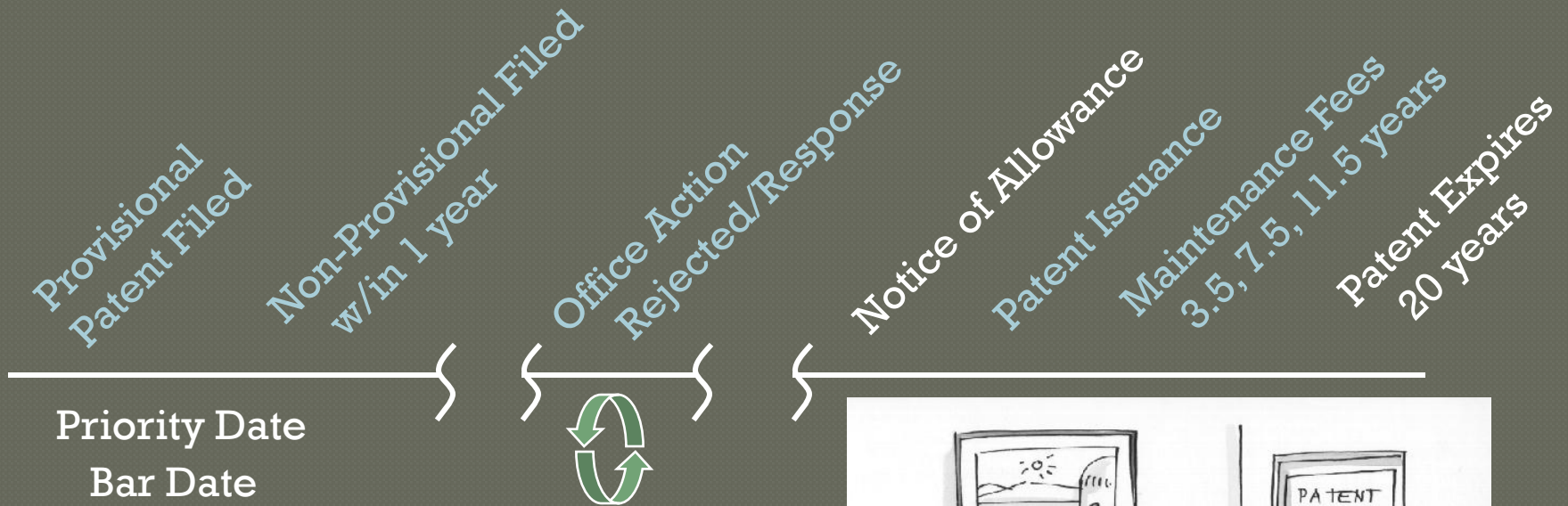


More Patent Details

- Claims
- Enforcement and jurisdiction
- Patent rights—protection



US Process and Timeline



Licensing and Commercialization

Maximizing Impact



Linking Ideas to Impact

Why Do Research?

- Passion for a particular field
- Intellectual curiosity
- Desire to find and share knowledge
- Desire to improve human condition



Improving the Human Condition

Typical Drug Development Costs:	\$1.0 B
Typical Number of Duke Drug Licenses:	~10/yr
Entirety of Duke University Endowment:	\$4.8 B

Commercial partners are critical in
Realizing benefits of research



Licensing

- Licensee (partner): obtains right to practice under patent
- Licensor (Duke):
 - Compensation
 - Patent ownership
- Inventor (PI):
 - Retained rights to practice
 - Research funds
 - Revenue share



Duke University Start-Ups

Diagnostic

Advanced Liquid Logic
Aldagen (formerly STEMCO Biomedical)
Bioptigen
Centice
Expression Analysis
Reproductive Health Technology

Drug Delivery

Affinergy
Merix Bioscience
Phase Bioscience
Regado Biosciences
Synergy Vaccines

Hardware / Software / IT

Advanced Liquid Logic
Bright View Technologies
MBright, Sentillion

Therapeutics / BioTech

Angiomics
B3Bio
Collective Therapeutics
Chaperone Therapeutics
FibroGen
Humacyte
Nitrox
Precision Biosciences
Reproductive Health Technology
Trimeris
Trevena

Therapeutics / Pharmaceutical

Aerie Pharmaceuticals
Bradmer, MicroIslet
Orexigen

Venture Services

Southeast TechInventures
SyneCor



Revenue Sharing Structure

	Net Revenue <\$500K*	Net Revenue \$500K - \$2000K*	Net Revenue >\$2000K*
Inventor	50%	33%	25%
Inventor Lab	10%	15%	15%
Inventor Dept	10%	15%	15%
OLV	10%	10%	10%
University Rsch	20%	20%	20%
Inventor School		7%	5%
Grad/Post Doc Rsch			10%

* After patent expenses are paid



Typical Objections

- Delays publication?
- Restricts scientific discovery?
- At odds with academic mission?
- Viewed as materialistic?



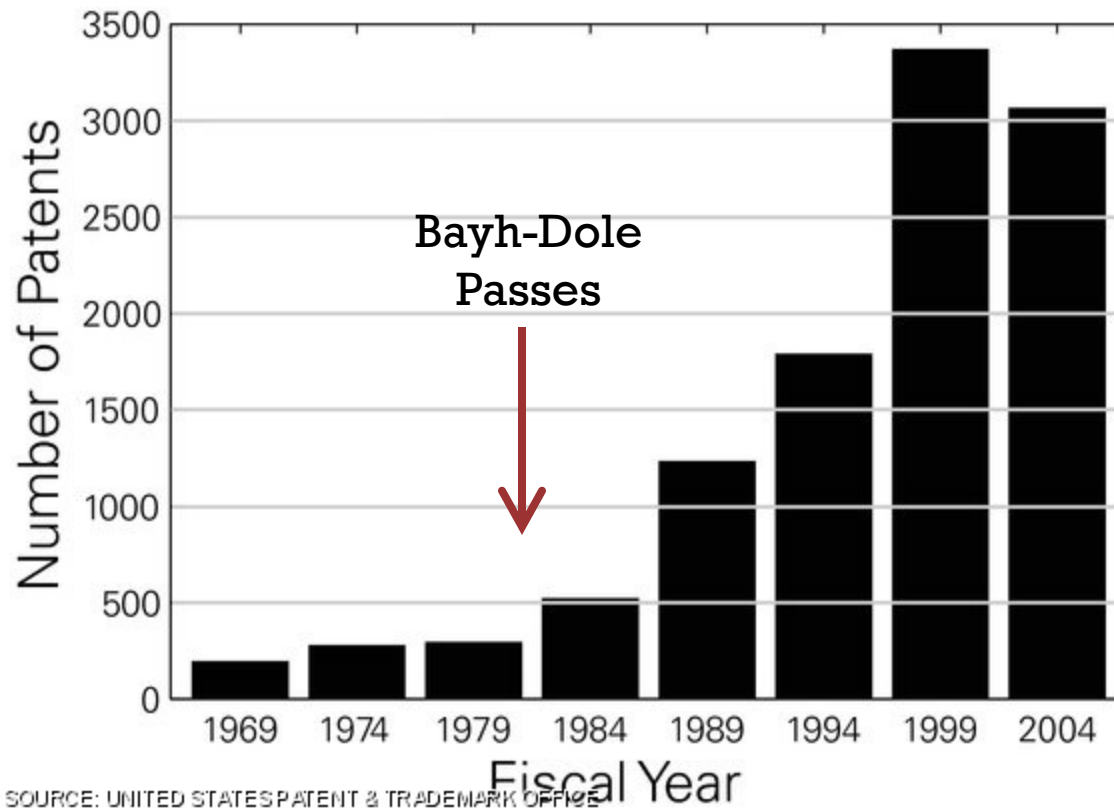
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Bayh-Dole Act: University IP

Patents Issued to U.S. Universities



Duke Patent Policy

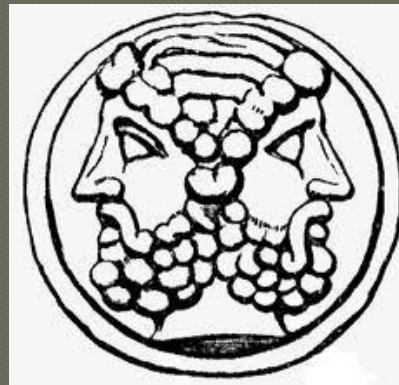
- All inventions must be disclosed
 - Not necessarily University-owned
 - Disclosure is confidential
 - Forms: olv.duke.edu/inventors/forms
- University-owned inventions come from:
 - University research
 - Scope of inventor's employment
 - University time, facilities, staff, etc.



Office Responsibilities

● Inventors

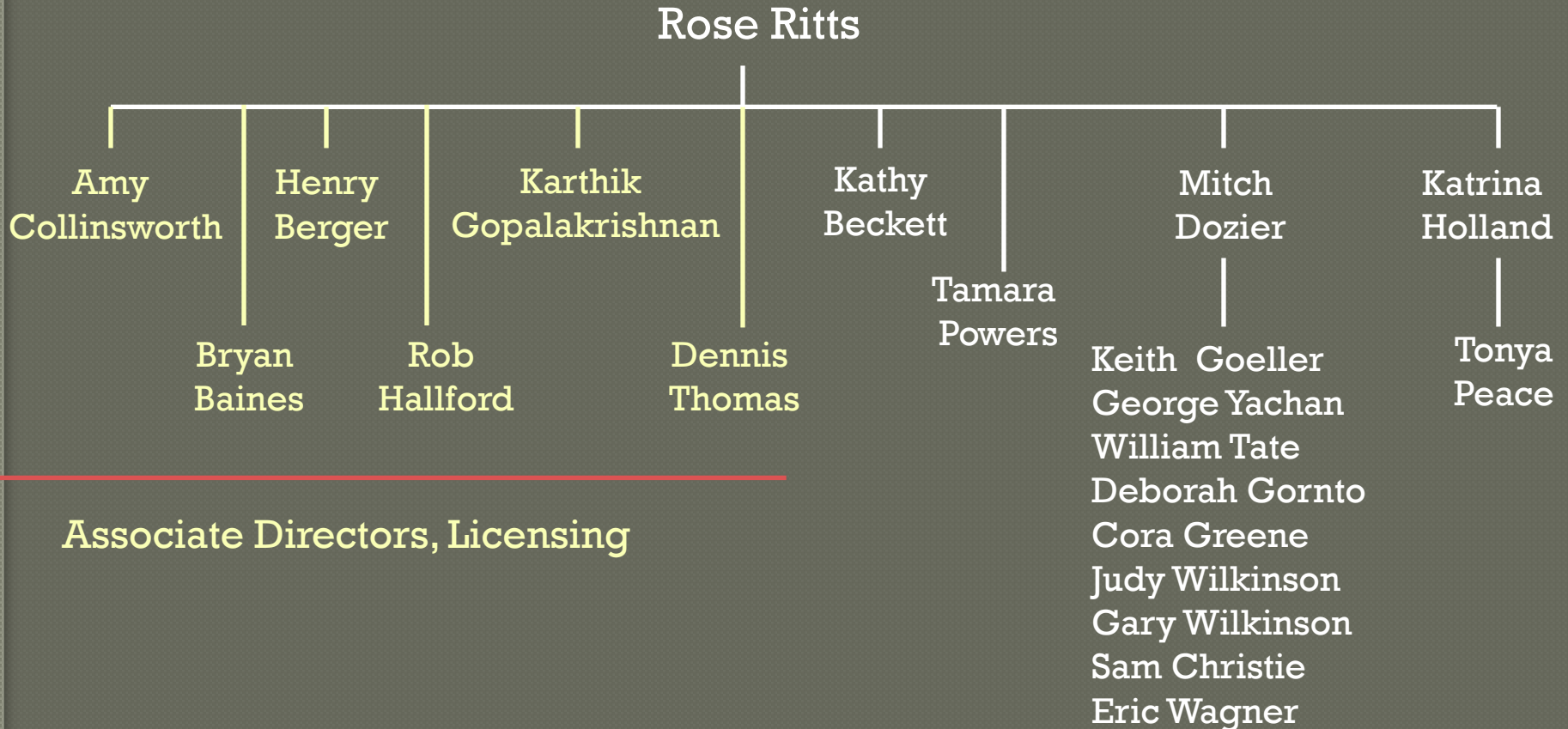
- IP assessment
- Market assessment
- Patent filing & management
- Government compliance
- Financial management



● Partners

- License & option negotiations
- Industry relationships
- Invention marketing
- Start-up formation
- Innovation mining

OLV Organization



OLV is one part of Duke University's Corporate and Venture Development, under Dr. Robert Taber, Vice Chancellor

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Amy Collinsworth,
PhD

Orthopedics, Stem Cells, Pharma tools (biochips and manufacturing support), sensors & control systems

Bryan Baines, RPh

Oncology, Pulmonary/Asthma, genomics

Dennis Thomas, PhD

Ophthalmology, Infectious Disease, Organ diseases, Agriculture

Rob Hallford, MS, MBA

Metabolism/Nutrition/Diet, software, biomarkers

Henry Berger, PhD

Brain machine interface, non-disease specific drug delivery, internet/computers, electronic materials/semiconductors, imaging device/equipment, transportation/environment

Karthik
Gopalakrishnan, PhD

Immunology, Neuroscience, Imaging Chemistry, Psychiatric Disease, Cardiovascular



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