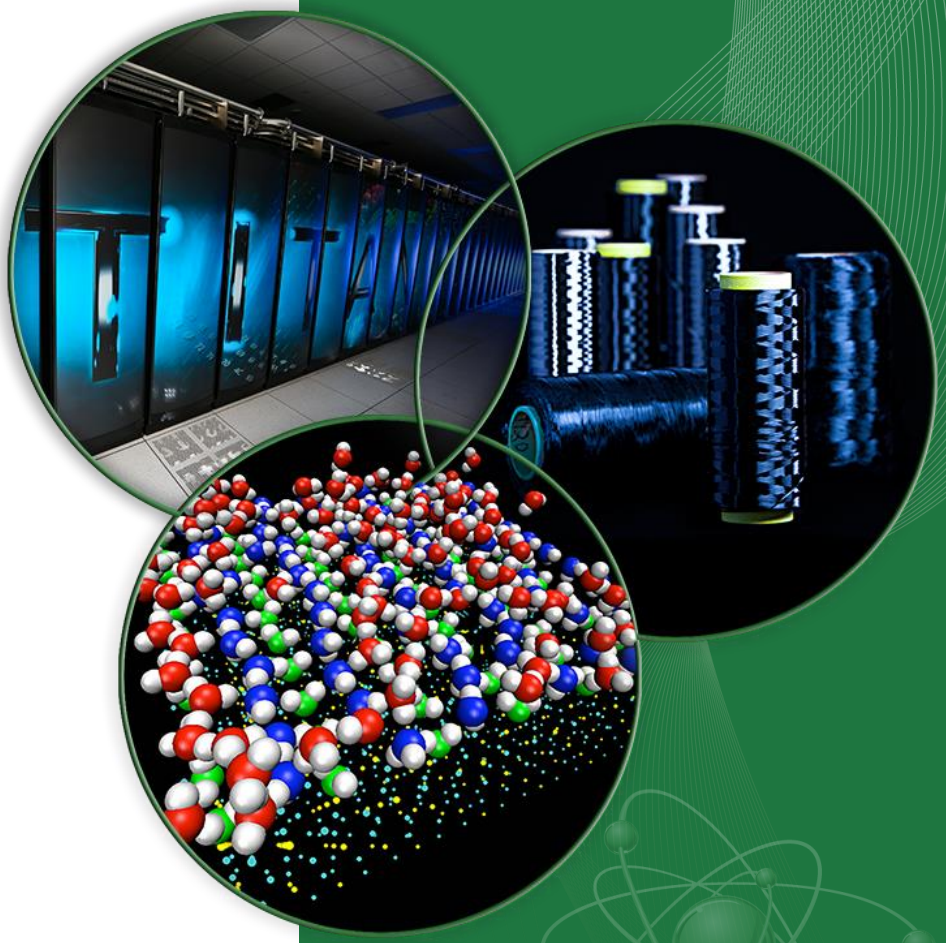
# Innovation and Commercialization at Universities



**Eugene Cochran**, **PhD, MBA**
Sr. Commercialization Manager
Technology Transfer

ORNL S&T Partnership Directorate

CURENT ERC
University of Tennessee,
Knoxville, Tennessee
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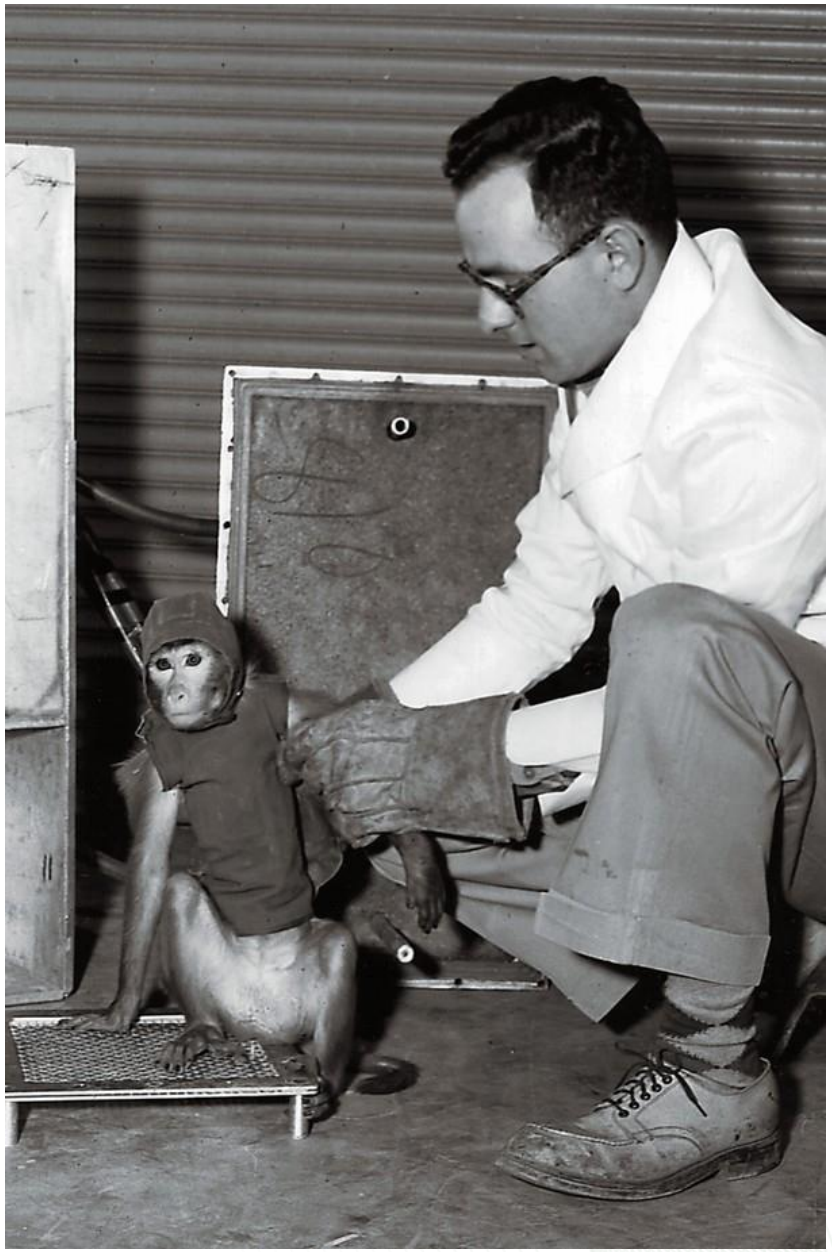
# Translation of Ideas to Products


# Why do UTK faculty, graduate and under graduate students disclose inventions?

Under federally funded research projects you are obligated to disclose inventions and because the United States uses patent law as a primary tool for deploying federally funded inventions in the private sector.

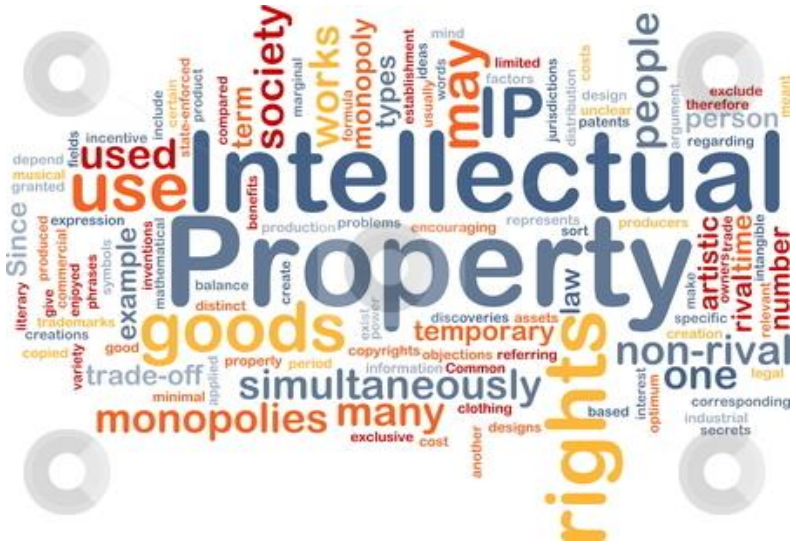


# The 1980 Bayh-Dole act effectively privatized science deployment

| The federal government… | The Bayh-Dole entity (university, non profit or small business)… |
|---|---|
| • Funds research<br>• Grants title to inventions to the Bayh-Dole entity<br>• Retains a Government use license<br>• Retains march-in rights | • Discloses inventions to the sponsoring agency<br>• Pays for patent protection for elected inventions<br>• Commits to market the inventions<br>• Is authorized to execute exclusive licenses |

*In the United States, patent licenses are now a primary pathway for deployment of federal science investment results*

# Examples of Intellectual Property




**Patent** – new treatment for cancer; a new medical device

**Copyright** – computer software

**Trademark** – Licensing of University name

**Tangible Research Products** – antibodies, cell lines

**Technical Data** – your protocols, experimental results

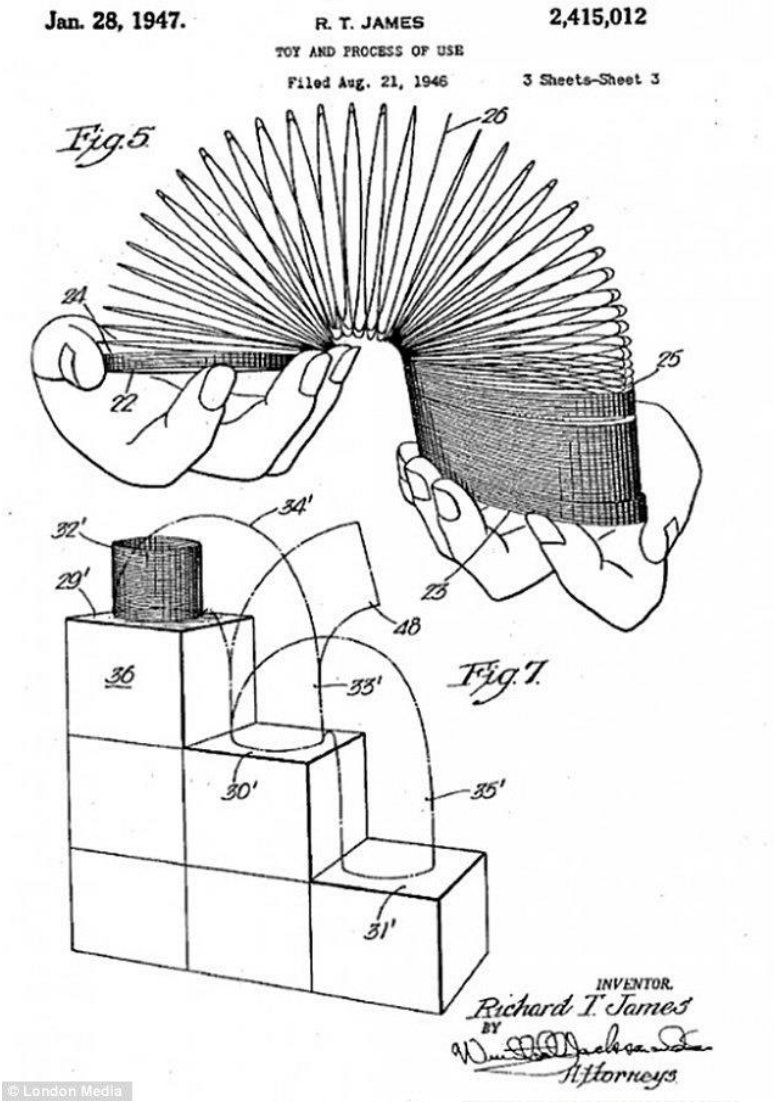
**Know-how** – experience with particular research

# What is a (patentable) invention?

- Utility: any new and useful
  - Process
  - Machine
  - Article of manufacture
  - Composition of matter
  - New and useful improvement thereof
- Design: a new, original and ornamental design for an article of manufacture
- Plant: any new (invented or discovered) distinct variety of plant that the inventor asexually reproduces

# Key Characteristics of an Invention: Patentable Subject Matter

- The Legislative History of the 1952 Patent Act informs us that Congress intended patentable subject to "**include anything under the sun that is made by man.**"
- In general, this definition excludes
  - laws of nature;
  - natural phenomena; and
  - abstract ideas.



# Key characteristics of an invention: Novelty

- An invention must be **novel**. An invention cannot be patented if
  - the invention is on sale anywhere in the world before the patent filing date;
  - the invention is in public use anywhere in the world before the patent filing date;
  - the invention is described in a printed publication anywhere in the world before the patent filing date; or
  - the invention is otherwise available to the public anywhere in the world before the patent filing date.
- The inventor has a one year grace period for his or her public disclosures.
- These rules do not prohibit improvements on existing inventions.

# Key characteristics of an invention: Utility

- An invention must be **useful**.
  - An invention is "useful" if it provides some identifiable benefit and is capable of use.
  - The majority of inventions are usually not challenged as lacking utility.
  - The utility doctrine prevents the patenting of fantastic or hypothetical devices such as perpetual motion machines.

# Key characteristics of an invention: Non-obviousness

- If an invention is not exactly the same as prior products or processes (i.e., prior art) then it is considered novel.
- However, in order for an invention to be patentable, it must also be a nonobvious improvement over the prior art.
- This determination is made by deciding whether the invention sought to be patented would have been obvious "**to one of ordinary skill in the art**."
- In other words, the invention is compared to the prior art and a determination is made whether the differences in the new invention would have been obvious to a person having ordinary skill in the type of technology used in the invention.

# To be patented, an invention must be adequately described

- **Enablement**: The inventor must describe his or her invention in a manner that would allow persons skilled in the art to make and use the invention.
- **Best Mode:** The inventor must describe the best mode of implementation of the invention if one exists. (This requirement was weakened significantly by the America Invents Act).
- **Written Description:** The written description requirement serves a teaching function, as a "quid pro quo" in which the public is given meaningful disclosure in exchange for being excluded from practicing the invention for a limited period of time.

# Who is an inventor?

- An inventor must have conceived a claimed element of the invention.
- Authorship and inventorship have different criteria and are not equivalent.
- Inventorship is determined by a patent attorney or agent.
- Correct inventors must be named on the patent.

# Potential Benefits to Inventors?

- Satisfy the Federal reporting obligations of your research contract.
- Make a positive impact on society.
- Translate your research into economic value.
- Attract additional lab/departmental funding.
- Creating educational opportunities for students and potential future job opportunities.
- Achieving recognition and/or financial rewards.

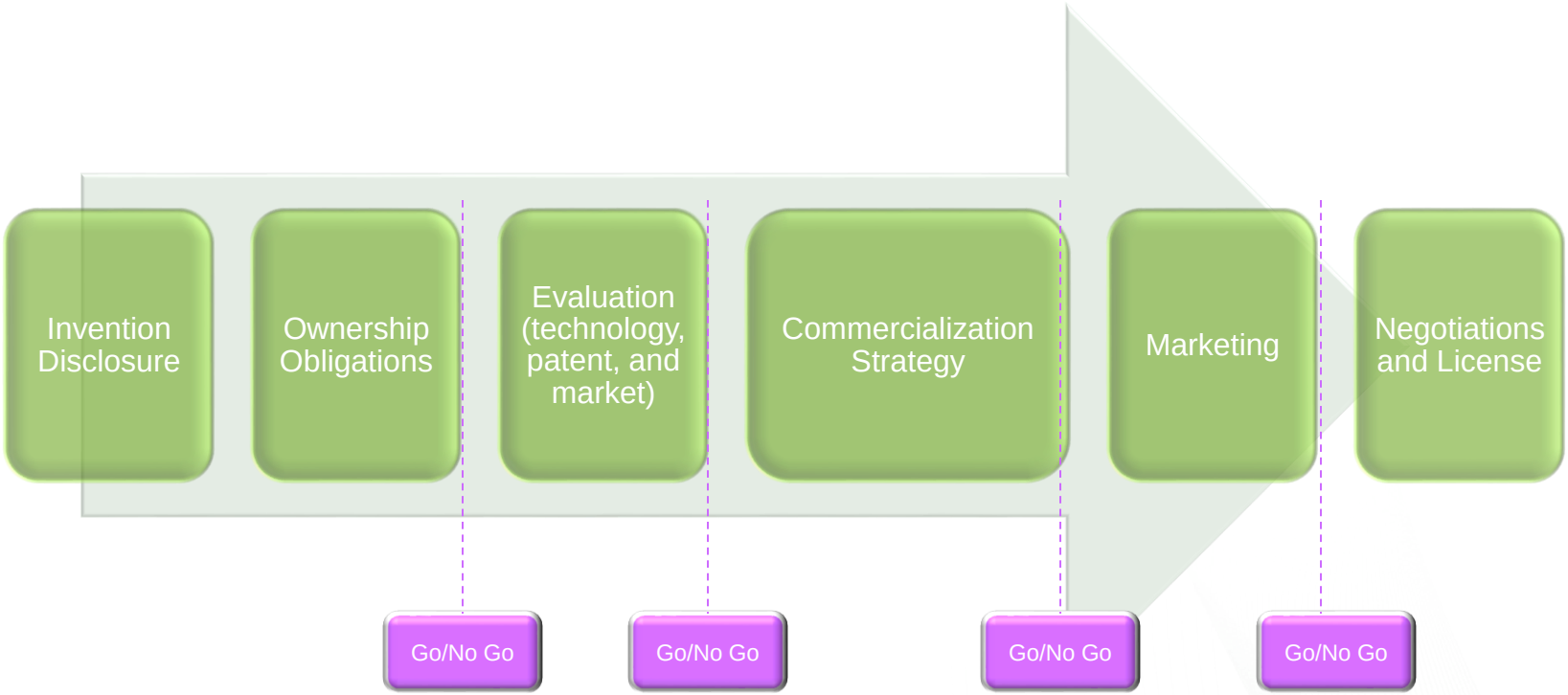
# Office of Technology Transfer

- The Office of Technology Transfer is a service unit under VPR or Research Foundation established for the management and licensing of intellectual property owned by the institution.
- Staffed by specialists in licensing, business development, and legal matters who are experienced in transferring technologies from the arts and humanities, physical sciences, life sciences, and information and computer sciences to organizations outside the institution.
- Responsible by policy for managing research tools, copyright and invention disclosures from all schools and colleges of the institution.
- Website:  utrf.tennessee.edu

# License Elements

- A licensing agreement is a legal contract between two parties, known as the licensor and the licensee.
- The licensor grants the licensee the right to produce and sell goods, apply a brand name or trademark, or use patented technology owned by the licensor.
- In exchange, the licensee usually submits to a series of conditions regarding the use of the licensor's property and agrees to make payments known as royalties.
- Scope of the agreement, including exclusivity or territorial restrictions; financial aspects including required advances, royalty rates, and how royalties are calculated; guarantees of minimum sales; time schedules involving "to market" dates, length of contract, and renewal options.

# Commercialization via patent and license




Notes:
- Engagement is an iterative process.
- OTT strives to provide information along the way.
- At each stage of the process decision points.

# Technology Transfer Defined

*The process of transferring skills, knowledge, technologies, methods of manufacturing, samples of manufacturing and facilities among government lab or universities and other institutions to ensure that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology into new products, processes, applications, materials or services.*


- Research (creation of the technological idea)
- Pre-disclosure, then completed invention disclosure
- IP assessment (protection, technical and commercial feasibility)
- IP protection (typically a patent application and its prosecution)
- Marketing and sometimes Proof of Concept grant
- Company creation and Seed funding
- Option to a License then conversion to Exclusive License
- Company growth and typically additional funding
- Product and market development
- (for biomed related – regulatory trials and approval)
- Commercial sales by licensee
- Royalty and related license payments
- Revenue distribution
- IPO or Acquisition/Merger
- Liquidation of stock held in company
- Distribution of proceeds to stakeholders

# Questions