

# Patents, Products & Public Health: *Your* Technology Transfer Experience at NIH

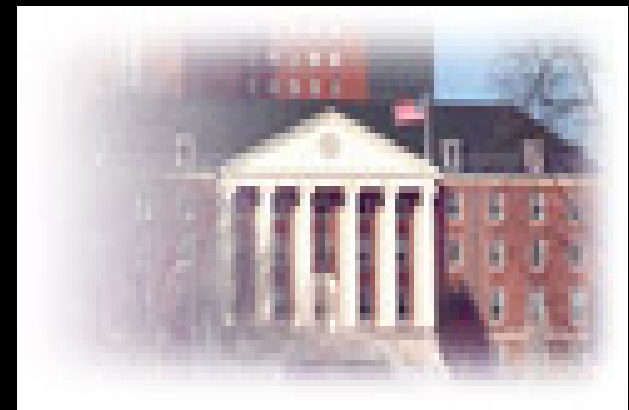
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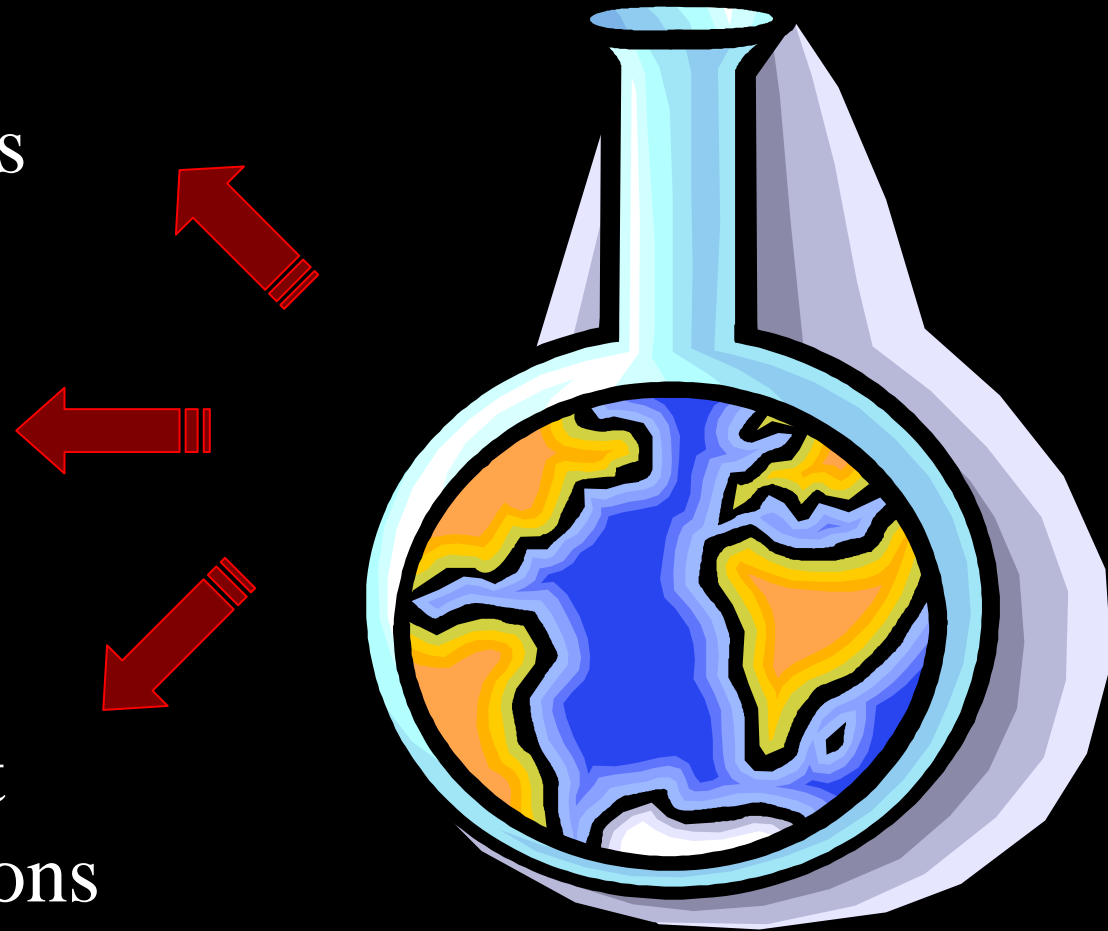


# In Health Research – Where Does Technology Transfer Fit?

Humanitarian Objectives

Globalization of  
Health Problems  
and their Relevance  
to Domestic Health

Economic Development  
and International Relations



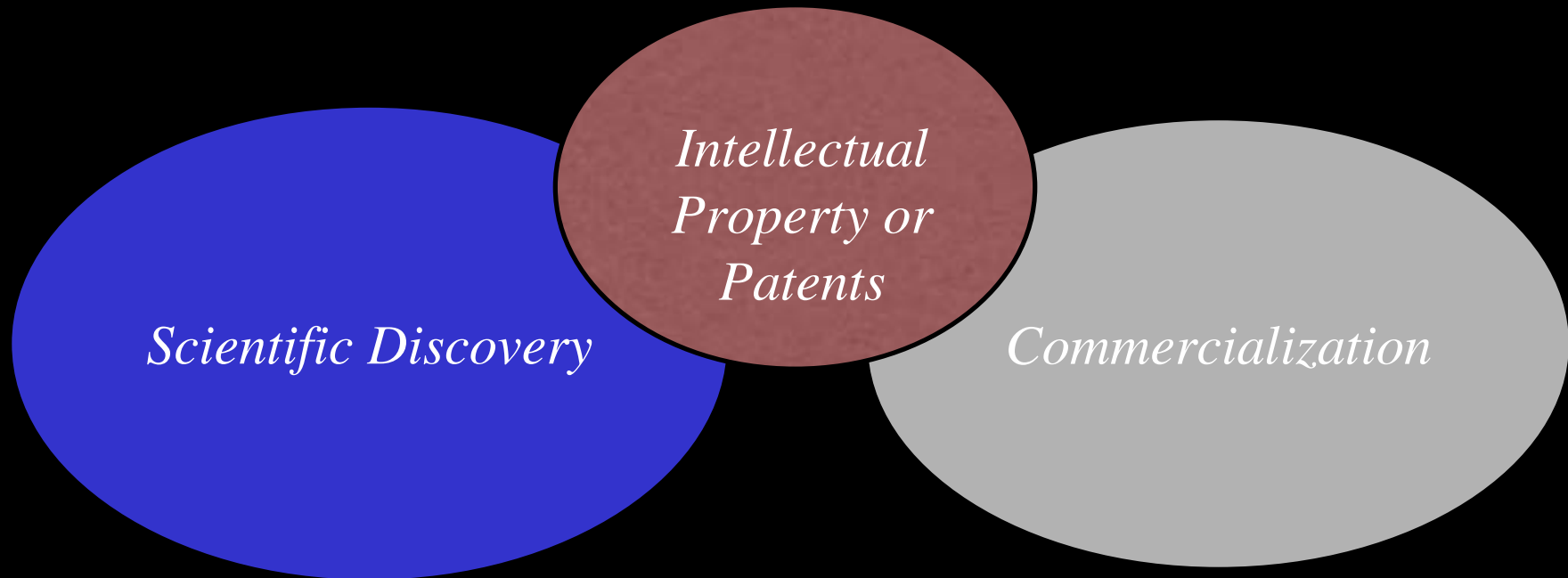
# In Health Research - Commercialization of Results From NIH Biomedical Research Programs

- Annual budget of \$ 29 billion (2008)
- 9% of funding for intramural research
- 6,000 intramural scientists / 18,000 staff
- 35,000 extramural scientists / 46,000 grants / 3,000 organizations
- Basic & clinical research discoveries
- Partners commercialize into products

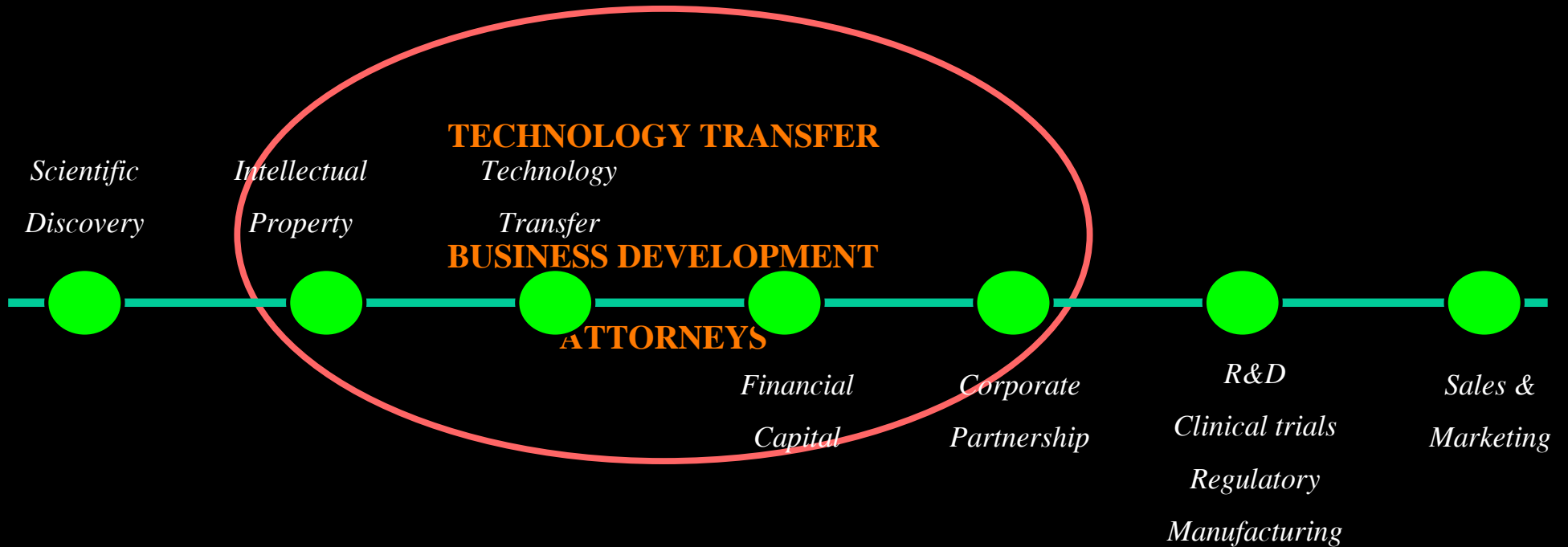
# Technology Transfer / Business Development: A Possible New Career For You?

- Yes, there is life after NIH intramural research!
- How can I consider technology transfer/business development as a career?
- How do I best make the transition?

# Technology Transfer: An *Interdisciplinary Field*



# Drug Development: From Lab Bench to Patient



# Critical Elements of New Career Development – Transition from Research to Business

- Scientific
- Business
  - *Set a realistic career goal as early as possible and make progress toward the goal continuously*
  - *It is a marathon but not a sprint*

# Technology Transfer at Universities and Federal Labs

- Evaluate inventions for patenting
- Closely work with inventors
- Work with law firms and management of patents
- Identify and negotiate with a commercial partner for license or collaboration agreements
- Managing relationship with corporate partners



# Business Development at Small Biotech Companies

- Management of intellectual properties
- In-license technologies from universities and research institutes
- Out-license to large pharmaceutical companies
- Corporate management

# Business Development at Large Pharmaceutical Companies

- Member of a group
- Specialized in one area
- More in-licensing than out-licensing deals
- More stable (historically) but at slower pace

# Required Attributes For Career Transition

- Skill sets
- Work ethic
- Potential for development

# Your Algorithm For Success

$$C = (A + P) * V * L$$

- C: career success
- A: achievement
- P: potential
- V: visibility
- L: luck

# Skill Sets and Employer Wish List

- Strong scientific background
- Knowledgeable about patents
- Good communication skills
- Experience in licensing
- Business sense

# Typical Education Background Mix

## May Include:

- Ph.D. or M.S. in biological sciences
- Registered patent agent
- M.B.A.
- J.D.

# How to Conduct Your Job Search


- Networking
- Right self -image
- Communication skills
- Know your self
- Circulate your resume

# How Can I Get Additional Training In Technology Transfer?


- Tech Transfer fellowships & internships
- Courses offered from Association of University Technology Managers (AUTM) and Licensing Executives Society (LES)
- NIH FAES Graduate School Certificate Program in Tech Transfer (1<sup>st</sup> graduates in 2009)



# Business & Entrepreneurial Education Programs At NIH




48th year



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and Undergraduate Courses


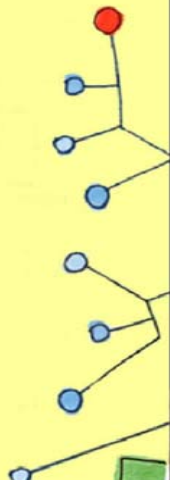
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- what is technology transfer?
- what are the career opportunities in the field?
- why not seek new opportunities in science?
- introducing...

***A Technology Transfer Certification Program***



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EDUCATION IN THE SCIENCES

Science. Ideas. Breakthroughs.



**Tania Fernandez**  
Associate

Dr. Fernandez joined Burrill & Company in October 2004 as an analyst and is involved in evaluating new investment opportunities across the life sciences spectrum. Dr. Fernandez secured her doctorate at the Cancer Research Institute in Bombay, India while on an Indo-US scholarship from the National Institutes of Health. Dr. Fernandez joined the College of Medicine, Texas A&M University as a Research Associate working in the fields of protein chemistry and genetic engineering with a special emphasis on light activated proteins and protein delivery systems. In 1999 she joined the National Cancer Institute and in 2000 was appointed Staff Scientist. Her research work revolved around models for hematopoietic cancers. Dr. Fernandez was also a member of the NIH BioScience Business Interest group. She completed courses in Biotech startups for Scientists and in Technology Transfer while at the NIH. Dr. Fernandez is also a free-lance journalist and writes on a wide variety of subjects, primarily focusing on biotech related issues.

- Example of NIH post-doc who took NIH Training Programs
- Now working at VC/Merchant Banking Firm

# Technology Transfer At NIH



# Technology Transfer at NIH

## Office of Technology Transfer

- Located in the Office of the Director, NIH
- Staff of 80+ persons – Ph.D., J.D., M.B.A.
- 14 Patent Contract Firms
- Policy, Patenting, Licensing

## Offices in Institutes and Centers

- Technology Development Coordinators
- Collaborative Agreements, CTAs, MTAs
- Royalties support further research

# NIH Office of Technology Transfer



# OTT Organization

- Office of the Director
- Division of Policy
- Division of Technology  
Development & Transfer

# OTT Organization

## Office of the Director

- OTT Director
- OTT Deputy Directors
- Marketing Group
- Royalties Administration
- Patent Prosecution and Annuity Contracts

# OTT Organization

## Division of Policy

- Technology Transfer Policy
- Extramural Invention Waivers
- CRADA Administration
- Extramural U.S. Manufacturing Waivers



# OTT Organization

## Division of Technology Development & Transfer

- *Cancer, Infectious Disease & General Medicine Branches*
  - Intramural patent prosecution & license agreements
- *Monitoring & Enforcement Branch*
  - Post-licensing monitoring, audits & infringement actions
- *Service Center Branch*
  - Tech transfer services for NIMH
  - Patent annuities & database management

# Technology Licensing At NIH



# Goals For NIH Licensing Program

- Benefit the public health
- Utilize IP appropriately as incentive for commercial development of technologies
- Attract new R&D resources
- Obtain public return on public investment
- Stimulate economic development

# Diagnostic & Therapeutic Products Licensed From NIH



# Research Products Licensed From NIH



# Recent Technology Transfer Success Stories at NIH

- Angiotech      Taxus (paclitaxel-eluting stents)
- Genzyme      Thyrogen (rTSH)
- Isis      Vitravene (antisense CMV)
- Medimmune      Synagis (RSV mab)
- Millennium      Velcade (myeloma drug)
- Biogen Idec      Zevalin (NHL I<sub>131</sub> mab)
- Amgen      Kepivance (KGF)

# Technology Transfer: Exciting and Growing Field

- Challenging but fun daily activities
- Demand for skilled people outstrips supply
- Many vacancies in:
  - University tech transfer offices
  - NIH and other government labs
  - Not-for-profit research institutes
  - Corporations
  - Patent laws firms

# Sources Of Information On Technology Transfer Training and Careers

- NIH Technology Transfer – [ott.nih.gov](http://ott.nih.gov)
- NIH FAES Graduate School – [faes.org](http://faes.org)
- Association of University Technology Managers (AUTM) – [autm.net](http://autm.net)
- Technology Transfer Society - [t2society.org](http://t2society.org)
- Licensing Executive Society (LES) – [lesi.org](http://lesi.org)
- Kaufmann Foundation – [kauffman.org](http://kauffman.org)
- Federal Lab Consortium – [federallabs.org](http://federallabs.org)
- Techno-L Listserv – [techno-l.org](http://techno-l.org)



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