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Center for Technology Transfer and Commercialization

Vanderbilt University

Public-Private Partnership Model for Economic Development

- Overview of Academic Technology Transfer
- Impact and Challenges of Tech Transfer
- CET Public-Private Partnership

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Role of Vanderbilt's Center for Tech Transfer and Commercialization (CTTC)

- Serve the Vanderbilt community by assisting Vanderbilt inventors in ***bringing their innovations to practical application for the benefit of the public***

CTTC Mission

To provide professional commercialization services to the Vanderbilt community, thus optimizing the flow of innovation to the marketplace and generating revenue that supports future research activities, while having a positive impact on society.

Function of Tech Transfer

- Serves as a conduit for the transfer of promising academic technologies to industry
- Contributes to regional economic development by licensing locally and supporting new venture creation
- Encouraging greater collaboration between academia and industry

Operational Responsibilities

Evaluate technologies for:

- Patentability/protectability
- Market potential
- Clinical merit/need in marketplace
- Potential for further development

Operational Responsibilities

Determine most effective commercialization route

- License out
- Create new venture
- Incubate internally

Operational Responsibilities

Negotiate development agreements

- Licenses
- Venture funding
- R&D agreements

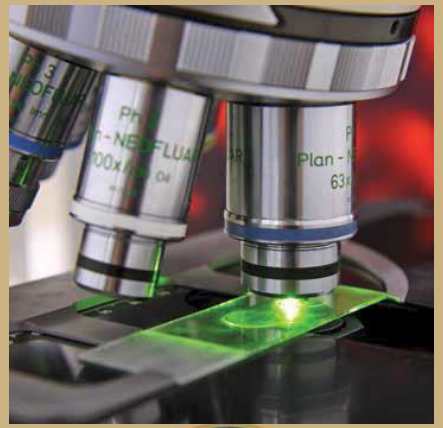
Varying Goals for Tech Transfer

- Revenue Generation
- Faculty Service
- Regional economic development / job creation
- Societal benefit
- Partnership development / cultural enrichment

Why Commercialize Technology

- Improve quality of life for citizens and patients
- Increase research opportunities via collaborations and strategic partnerships
- Generate revenue for inventors and for Vanderbilt to support future research
- Create jobs and economic growth opportunities via start up companies
- Helps with recruitment and retention of faculty
- Increase reputation/brand
- Invigoration – for the experience

Societal Benefit from Tech Transfer



Allegra

Coumadin

Hepatitis B vaccine

Streptomycin

Pap smear

Saccharin

Rocket fuel

Emtriva

Pacemakers

Taxol

Gatorade

Neupogen

Vitamin D milk

Cysplatin

Penicillin

LCDs

PET/CT scanner

Magnetic memory

Remicade

Fluoride toothpaste

Insulin

Polio vaccine

Restasis

Plexiglas

MRI scanner

Electron microscope

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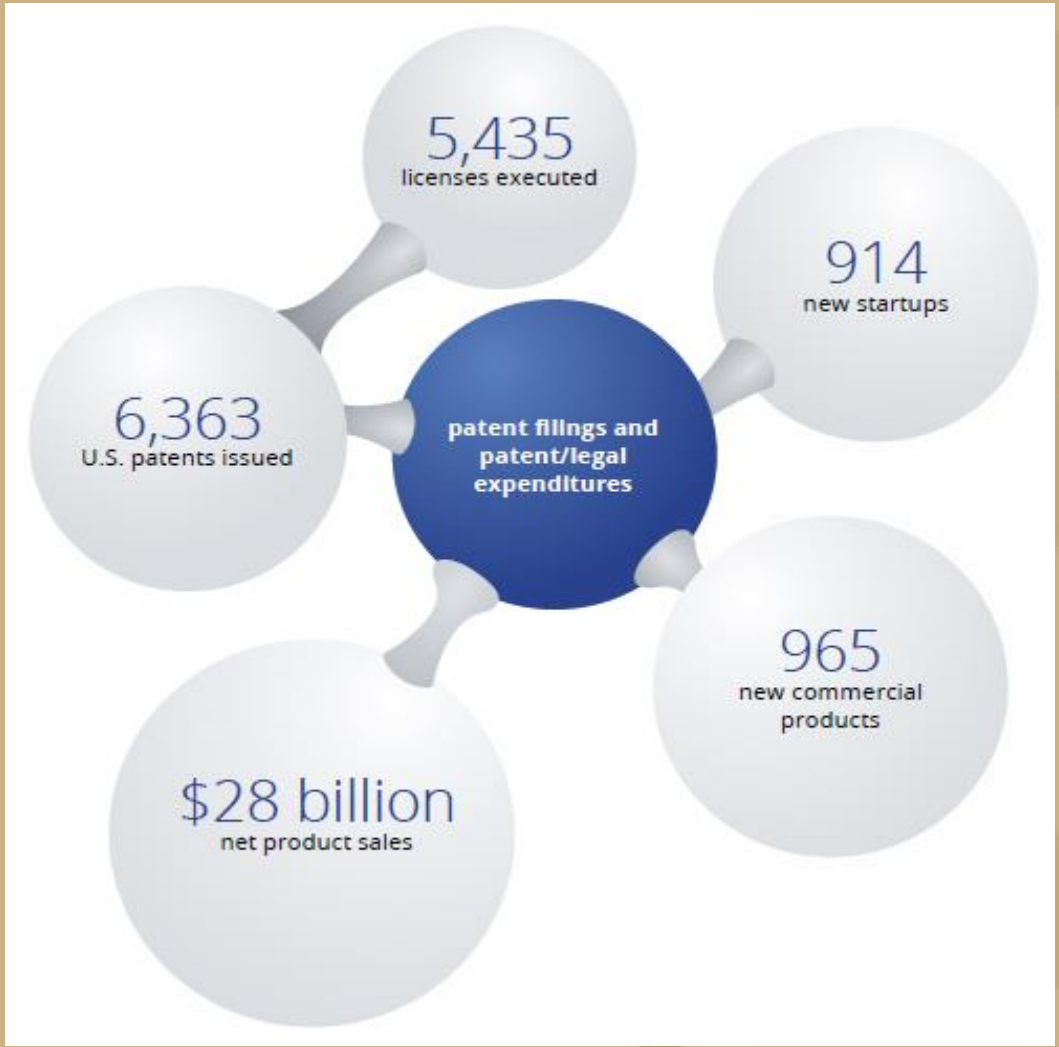

914
startups were formed
▲12%

702
of them had their primary place of business in the licensing institution's home state
▲14.8%

4,688
startups were in operation at the end of FY2014
▲11.4%

$28 billion
of net product sales were generated last year
▲27.2%

965
new commercial products were created by companies licensing university technology
▲34.2%

Top Ten Academic Revenue Producers

data several years old

Institution	Product	Gross Income		Institution	Product	Gross Income
City of Hope / UCLA	Human insulin	$200M		NYU	Remicade (inflammation)	$142M
Northwestern	Lyrica (neuropathic pain)	$192M		Princeton	Nanoparticle drug delivery platform	$115M
Cal System*	mAB production methods; Hep B vaccine	$182M		Mass Gen. Hospital	Imaging systems for GI procedures	$93M
MSK	Neulasta (blood cell growth factor)	$173M		MIT	Drug formulation methodologies	$76M
Columbia	Chimeric antibodies	$146M		Univ of Washington	Gardasil (HPV vaccine)	$67M

Academic Product Deficiencies

University technologies are often:

- Non-enabled (inadequately described)
- Unproven (not reduced to practice)
- Unpatentable (anticipated, obvious)
- Unprotectable (too narrow, use undetectable)
- Unmarketable (market too small, too crowded)
- Unlicensable (heavily dominated)

Academic Commercialization Success Rate

- ~15% of disclosed inventions are licensed
- < 50% of licensed inventions generate any revenue at all
- 5-10% of those that generate any revenue, product more than $1M throughout term

Academic Commercialization Success Rate

- Therefore <1% of disclosed technologies are likely to have a substantive impact

Tough Odds Indeed

Logical Conclusions

- It is dangerous to rely on academic technology transfer to fill budget gaps or research support gaps
- Tech Transfer Offices need to be as creative as possible in getting technologies to the market

Public-Private Partnership Model for Economic Development

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- **CET Public-Private Partnership**

CET Background

- Cumberland Emerging Technologies (CET)
- Formed circa 2003 as a partnership between:
  - Cumberland Pharmceuticals Inc*
  - Vanderbilt University
  - Tennessee Technology Development Corp.
    - Funded by TN Department of Econ Dev.

*Only public pharma company in TN

CET Mission

MISSION

To bridge the development gap and bring biomedical technologies from research and development laboratories to the marketplace.

STRATEGY

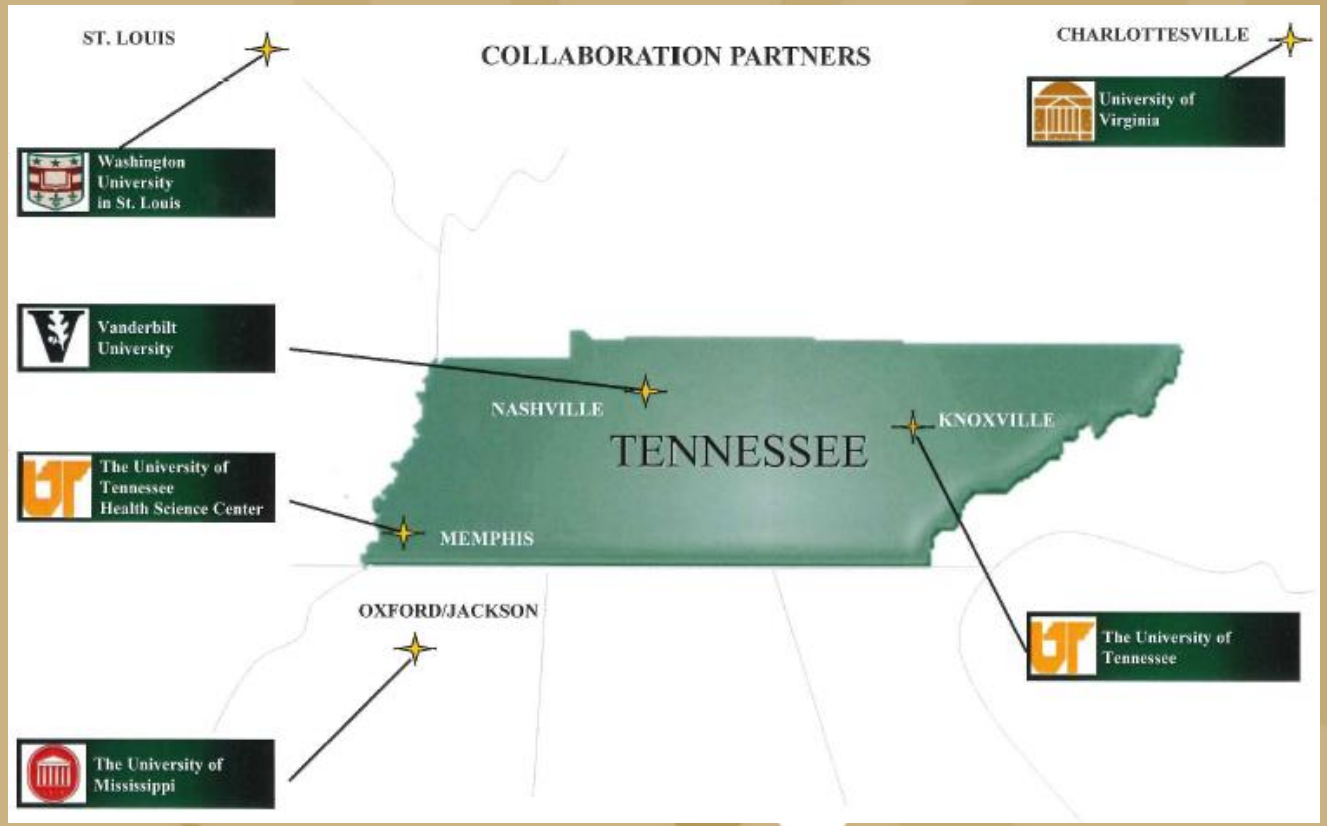
- Build Attractive Portfolio of innovative projects
- Establish Partner Agreements for project pipeline
- Assemble Outstanding Team of Board, Management & Advisors
- Develop Laboratory facilities to support project & companies
- Seek Grant & Other Funding to catalyze projects

CET Components

- SBIR / STTR proposal assistance
  - Grant writing
  - R&D contribution
- Incubator – CET Life Sciences Center

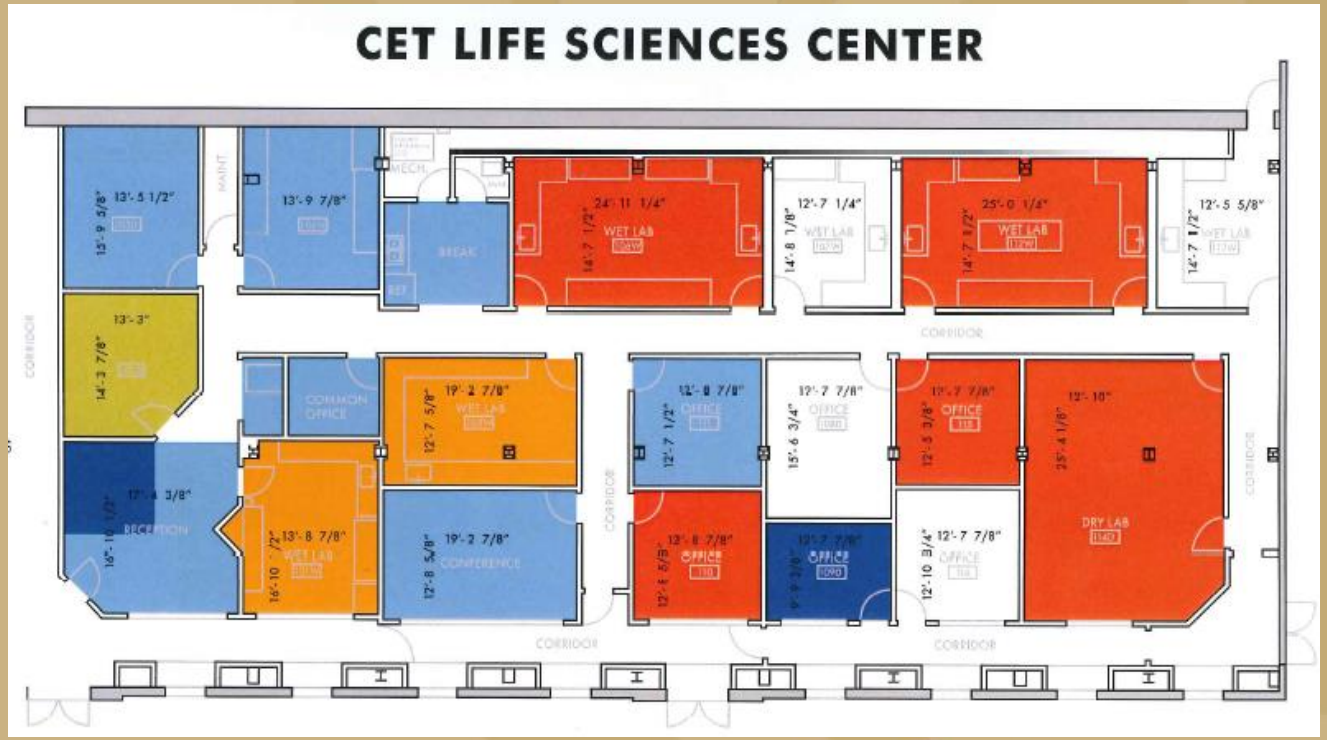
CET SBIR/STTR Collaborations

- Vanderbilt
- UT-K
- UT-HSC
- Wash U
- Ole Miss



CET Incubator

- 14,000 sq ft.
- 6 current tenants
- 9 graduates



CET Outcomes

- 44 SBIR/STTR applications filed (Phase I&II)
- 9 awards received (~20% funding rate)
- Nearly $2M in awards received
- 4 applications in process (2 PI and 2 PII)
- 4 agreements in negotiation

CET Outcomes

- One product out-license to CPI and in Phase II clinical trials
- 3 products in late stage pre-clinical trials
  - One in formulation in preparation for PI clinical

Benefits to Vanderbilt & Other Partners

- Increased faculty engagement
- Increased support for research
- Increased investment in development
- Outlet for challenging technologies
  - In need of proof of concept or other development
- Modest job creation

THANK YOU

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