




Research & Economic Development

Technology Transfer & Commercialization


Jake Ward
University of Maine
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What is tech transfer?


- The movement of a technology from a basic idea to a commercial product.
- There's economics involved
- There are a lot of steps along the way





Academic Technology Transfer Mission

- Creation and the dissemination of knowledge
- The transfer of technology is part of this mission
- However, inventions are not made in a response to a market need



So Why do this?



- Granting agencies would like you to!
- Source of economic development for the State
- Source of revenue for not only you, but for future research
- Products from basic research have a broad benefit




Realistic Expectations



- Every institution/inventor/invention is different
- Expectations need to be individualized (no "cookie cutter")
- Not everybody belongs in this space
- Deal by deal (more likely by individual research area)
- Don't/can't force a personality change
- ALL want more - will get less
- Needs commitment of the inventor to be successful - like raising a child




Maine R,D&C Strategy




The State makes investments in R&D for Return on Investment - Jobs and Economy


- University based R&D
 - Maine Economic Improvement Fund, Fed Grants
- Non-profit Labs
 - Maine Biomedical Coalition, Marine Technology Fund
- Clusters
 - Trade Associations, Industry Groups
- Private Sector and Start-Up Companies
 - Maine Technology Institute grants, MMEP, SBDC
- Technology Development Centers
 - Seven regional tech-business incubation centers
- Inventors
 - Maine Patent Program
- Students
 - Innovation Center, Entrepreneurship Programs



Invention process



- Recognize that technology often matures at a different pace scientifically than commercially
- Difficult to pick the "winners"
- Must balance patent investment with commercial potential

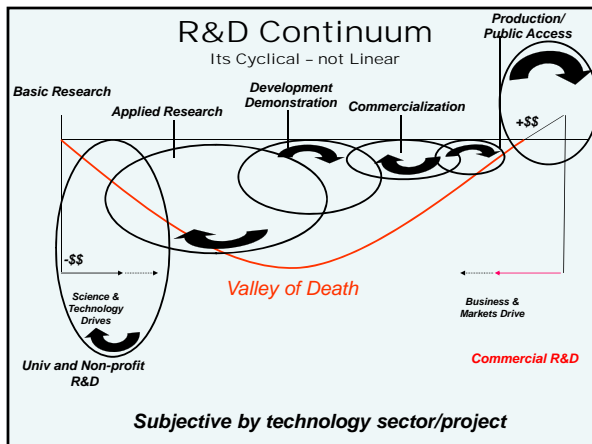


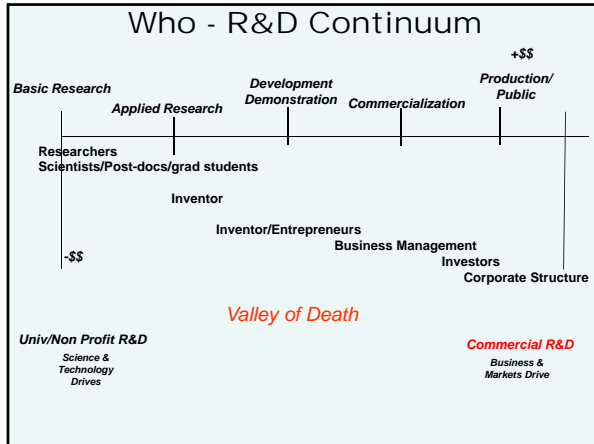
Looking for Opportunities

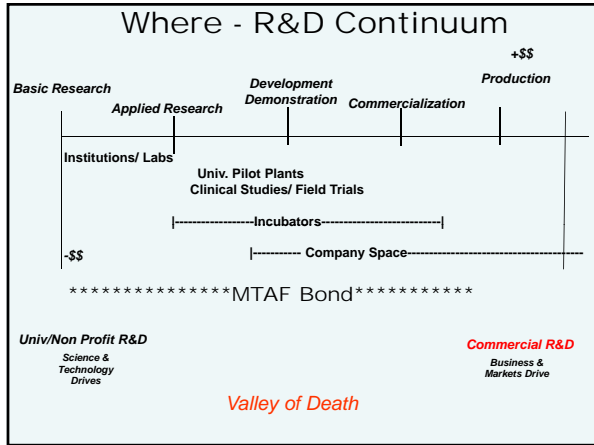


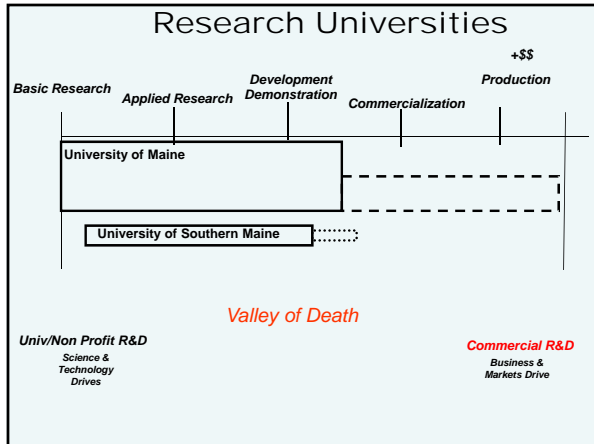
- Follow the money - funded research, sponsored programs
- Interactions and Interfaces of people, places and things
 - Interdisciplinary research programs and collaborations
 - Commercial connections
- Look for Multi-Patent Portfolios

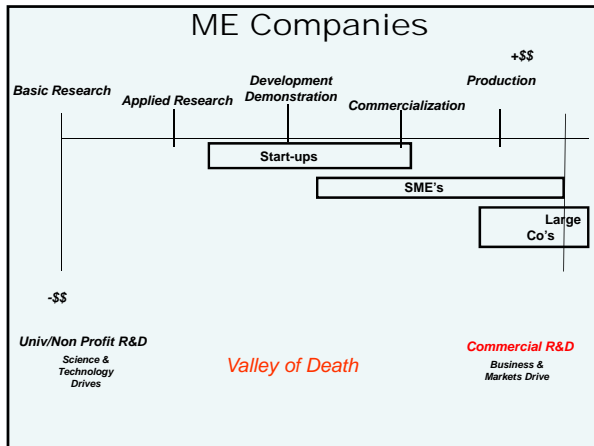


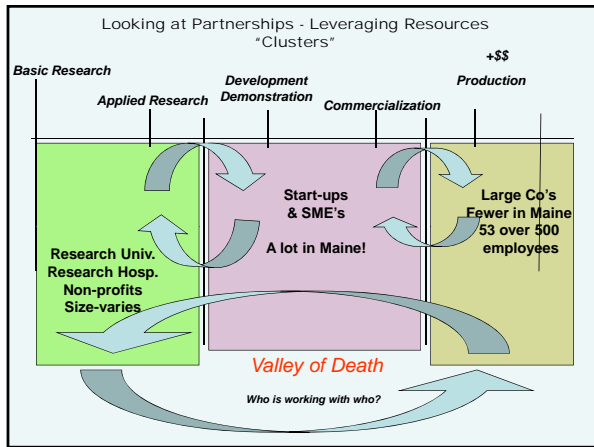


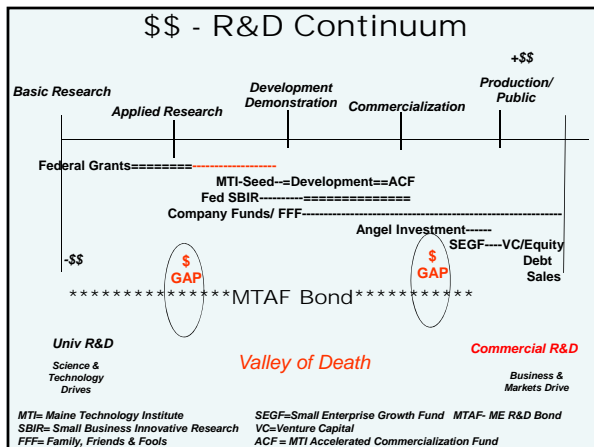















Sources to fill the \$\$ gap




- More government grants
- SBIR grants
- Maine Technology Institute
- Angel funding
- Venture funding
- Company sponsored research




How to prepare for the gap




- Understand that investors or licensees are looking for products to fill markets- not ideas
- They're not another grant agency - they want bang for \$\$
- They'll think in quarters, not in semesters or fiscal years
- You can often do things quicker and cheaper than they can - but never quick and cheap enough!





Cultural Differences

	<p>Academic Grants, risk averse</p> <p>Transfer very early</p> <p>Investigator sets research research Priorities</p>	<p>Commercial Profit, investment, risk sharing</p> <p>Value creation before transferring</p> <p>Management sets Priorities</p>
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Cultural Differences

	Academic Collaboration, publication	Commercial Secrecy
	Pending publications business often drive patent	Patent driven by decision
	Budgets - Fed style = Direct/Indirect	Total costs = Costs+Profits





Company Collaborations

	<ul style="list-style-type: none"> • Important for the company to know the Intellectual Property situation up front
	<ul style="list-style-type: none"> • UMaine owns what is invented at UMaine
	<ul style="list-style-type: none"> • Company can have first right of refusal on any invention
	<ul style="list-style-type: none"> • Company & UMaine should define background IP before start



UMaine Tech Transfer

	Resources on WEB - www.umaine.edu/dic
	Review UM IP Policy
	<ul style="list-style-type: none"> • Extensive Use of UM resources <ul style="list-style-type: none"> - UM owns, patents, shares royalties • Students' ideas, independent of employment, grants, etc - <ul style="list-style-type: none"> - student owns • Either way - <ul style="list-style-type: none"> - UM can help commercialize
	

Faculty, Staff, Student Inventors

Contact ORED if:

- You have developed an invention
- You are named as the inventor on a patent application filed by a company or branch of the U.S. government
- You are asked to provide unpublished information or research results to a company
- You are going to publish a paper or give a presentation about a research project that may involve a new invention
- A company expresses a desire to license technology from your laboratory
- You already have or would like to start a company based on technology developed at the university

Patent Process

<http://www.umaine.edu/dic/Standardops.html>

Bayh- Dole & Publish/Patent or perish vs. public disclosure

1. Identify Inventors/Creators
2. Identify "sponsorship" if applicable – i.e. (grant, contract, other)
3. Identify ownership in accordance with the University of Maine System Policy

<http://www.maine.edu/pdf/intprop.pdf>

- Identify reporting requirements

By sponsor


Deciding to Commercialize

Cont.


5. Identify existing or potential commercialization partners
6. Identify additional R&D funding to move development forward
7. Conduct In-house Prior Art search as applicable – Maine Patent Program – www.maineipatent.org
8. Conduct Professional Prior Art search as applicable

*Typical Go/No-Go decision
Next Funding*


Licensing Technologies




- License to an existing company
 - Maine vs. Non-Maine
 - Incentives for Maine Economic Development
- License to Start-up



Licensing Technologies



- Key Licensing components
 - Define Technology/IP
 - Define Territory
 - Exclusive vs. Non-exclusive
 - License Fees
 - Royalties - % of Sales
 - Minimum Royalties/Sales
 - Other performance requirements
 - Sub-licensing terms
 - Claw Back Provisions




Starting a Company There is Money and Help




- Maine Technology Institute, Libra Future Fund, SBIR/STR grants can help get started with \$\$\$
 - \$5000-\$1,000,000 !!!
- Work with the Foster Student Innovation Center, Target Technology Incubator, & Maine Patent Program to evaluate - get started
- Take the risk in a supportive environment
 - or
- License technology if applicable





Business Incubation





- UMaine operates/affiliated w/three and USM Hosts one of Maine's Centers
- Provides:
 - Physical space
 - Hands-on management assistance, referrals & networks
 - Affiliate (non-tenant) programs
 - Connections to funding
 - Improve chances of success



University of Maine Affiliated Incubators

- **Target Technology Incubator**
 - www.targetincubator.umaine.edu/
 - Center for Advance Computing - super computer
- **Center for Cooperative Aquaculture Research**
 - www.ccar.um.maine.edu
 - Franklin, Maine
- **Darling Marine Center**
 - Walpole, Maine
- **Composites Technology Center**
 - www.techcentersmaine.com/composite.htm
 - Sandford
 - Greenville
 - UM AEWC
- **Center for Enterprise Development**
 - Hosted at USM, Portland
 - <http://www.ceemaine.org/>



Foster Student Innovation Center

- Support student entrepreneurship into knowledge-based companies
 - **Courses, Workshops, Seminars**
 - **Business and Technical Assistance**
 - **Mentoring, Financing**
 - **Place to become a business!!**
 - **Feeder to incubator system**
- Innovation engineering minor
- Other entrepreneurship courses and workshops
- Innovation Teams - Internal and external projects
- Help with start-up funding
- Entrepreneurship Club
- Several new student incorporated companies in the last two years

Prototype Development UM Resources



- Prototyping and small production, troubleshooting projects
- Real scale development and demonstration
- Examples
 - Pulp and Paper Development Center/FBRI
 - Food Science Pilot Plant
 - Center for Cooperative Aquaculture Research
 - Aquaculture Research Center
 - Advanced Engineered Wood Composites Center
 - Laboratory for Surface Science and Technology
 - Target Technology Center Supercomputer
 - Advanced Manufacturing Center
 - New Media and ASAP





You're Done



- Kris Burton
- Startups







Newly Engineered Odor Reducing Landfill Application
 UM Pending Application- Ruthven, Bilodeau, MacKay, Bishop

A major component of odor from landfills is *hydrogen sulfide (H2S)*; a toxic gas which smells like rotten eggs.

The Zeomatrix Zeo-BLOC™ is a patent pending technology which converts *H2S* into a nonreactive material.

- A new *Alternative Daily Cover* incorporating Zeo-BLOC™
- Absorbs high ppm levels of hydrogen sulfide
- Designed to be deployed and left in place.
- Made from a renewable resource, paper
- Zeolite additive is a non-toxic naturally occurring substance
- Environmentally friendly biodegradable product

- Zeomatrix is start-up, MTI funding, SBIR funding, in Target Technology Center
- alpha production in Pilot Plant, beta in local landfills – scaling and product line expansion

Maine Marine Manufacturing, LLC (2005)



January 11, 2008
Boothbay Harbor



February 2008
Builders Trials

*MMM has option on
property for new
shipyard in Hampden*



Yo Bon, LLC



- Student IP
- Product developed as part of a course
- Local prototypes in Food Science Pilot Plant
- MTI and Future Fund Start-up \$\$
- Discussing Licensing with major food retailer



- Jason Bolton and Gov. Baldacci

Contact Info



- Jake Ward 581-2201
 - Jward@maine.edu



- Kris Burton 581
 - Kris.burton@maine.edu
- Debbie Neuman 866-6500
 - Target Technology Incubator
 - Dneuman@maine.edu



- Renee Kelly and Jesse Moriarity
 - Foster Student Innovation Center
 - Rwkelly@maine.edu