Innovation and Entrepreneurship at the University of North Carolina

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A Brief History of US University Innovation

1965 - the University of Florida and Gatorade

- Sweating football players lose electrolytes (salts), and strength
  - Prof. Cade: replace water, but **add Na, K salts, & sugar**

  => Florida Gators become second half football champions
- 1967: Stokely-Van Camp Co. markets **Gatorade**
  - Sales: $100M in 1983, $2.2B by 2001

– Major legal battles, settled 1973 - Gatorade Trust
  - UF received >$80M since 1973 to support research

– By 2003, UF launched 50 biotech companies

– UF now top 10 in biotech transfer, licensing, patents
  - Glaucoma drug Trusopt, Senticon termite system

A Brief History of US University Innovation

- 1980 **Bayh-Dole Act assigned rights** to inventions from government sponsored research **to universities**
  - Government retains royalty free non-exclusive license
- US universities set up **Technology Transfer Offices**
  - Increase, support faculty **research**
    - Increase prestige
    - Helps keep successful faculty
  - Prompt **patent filings** with University as owner
  - **License** technology to companies to earn royalties
- Companies seek licenses to
  - Invest in **new technology**
  - **Lower cost** vs in-house research and development (R&D)

A Brief History of US University Innovation

But problems develop

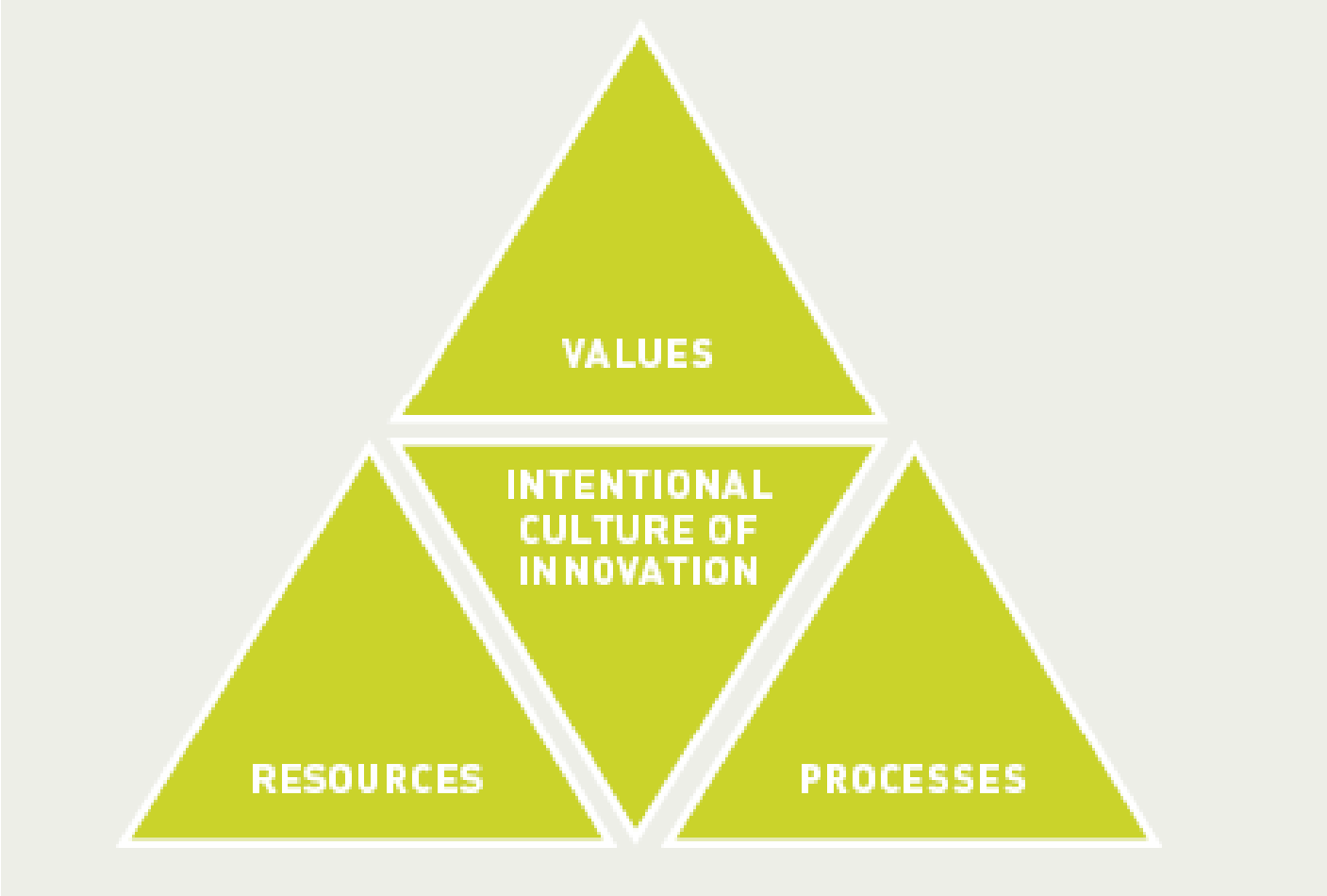
- Universities want too much, give too little -
  - Too much **paperwork and restrictions** on inventors
  - **Conflict of interest** - student and faculty work supports education? or business?
  - **Demand lots of money** for untested technology, **keep rights** to technology
- Start-up **companies hard to form**
  - **Venture capital hard** to raise in many places
  - **Lack infrastructure and training** for new entrepreneurs
- Companies not always good partners
  - **High secrecy** - no exchange of results
  - **Invent around** university patents
  - Fail to follow through or commercialize
    - **Slow** development **or** actively **suppress the technology**

=> Innovation process breaks down

UNC Sets Standards:

Clarity and Alignment

Values: That which is worth doing.
Resources: Needed people, time, money, facilities, and equipment.
Processes: Needed structures, rules, and methods.



A Strong Culture of Innovation at Carolina

Prepare - knowledge, skills, & connections to drive ideas to innovations
Collaborate - widely across disciplines, increase **diversity**
Translate - ideas **faster** into **more** innovations
Align - people, incentives, resources, funds and processes
Catalyze – use experience of leaders to implement

Important ideas
for a better world

Roadmap for the Future

Chancellor's Innovation Circle Committee appointed to roadmap the future

- 2009 background report: http://innovation.unc.edu
- 2010 Innovate@Carolina strategic roadmap report:
- $125M capital campaign to support innovation started
- 2 new Innovation Professorships
- 18 Entrepreneurs-In-Residence throughout the campus

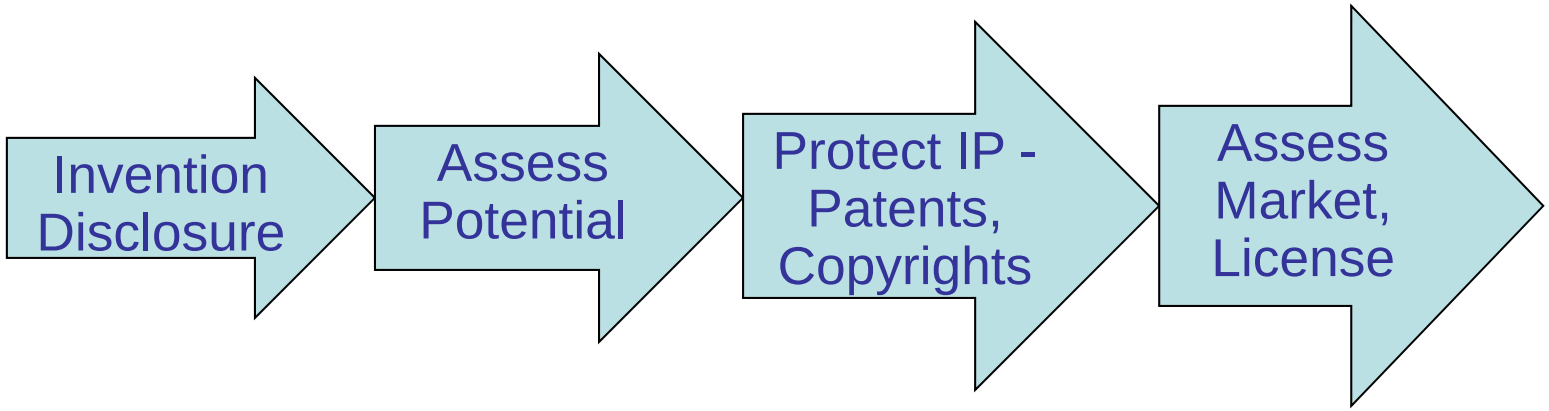
'Our to-do list is nothing less than the greatest problems of our time:

- *Cure diseases, and get those cures to all the people who need them.*
- *Find and invent clean energy.*
- *Inspire students in our public schools.*
- *Feed seven billion people.*
- *Describe the world, and*
- *Replace conflict with understanding.'*
  - *Chancellor Holden Thorp (Chemistry Professor and 2 time entrepreneur)*

University of North Carolina – Chapel Hill
Office of Technology Development (OTD)

The **UNC OTD** (http://otd.unc.edu) created:

- Help translate **discoveries into useful products**
  - Evaluate **commercial potential**
  - Help with **patents** and other intellectual property (**IP**)
  - Identify **commercial partnership** opportunities
    - Attract industry **research collaborations**, or
    - Help found **new start-up companies**
  - Negotiate **licensing agreements**



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- **Educate and encourage** UNC innovation and entrepreneurship
  - Carolina Innovations Seminars - monthly
    - Lessons and success stories
    - Networking (and free beer!)
  - OTD Internship program for graduates and postdocs
- Stimulate local and regional **economic development**

UNC-CH
#1 US Entrepreneurial Campus*

Carolina Entrepreneurial Initiative (CEI) started 2004

- **Goal**: bring **training in entrepreneurship** to education, research and outreach at North Carolina.
  - Kaufmann Foundation + UNC funds - $10.5M
  - Commercial ventures **plus** social, artistic and scientific
  - Reached 1000s: students, faculty, staff, alumni, partners with many activities
    - Entrepreneurial Boot Camp: 4 day workshop for 16 faculty
    - Carolina Innovation Scholarships: 4 entering students/year
    - Carolina Launch Pad (www.carolinalaunchpad.org/): for IT entrepreneurs

*Forbes.com and Princeton Review

A Priority: Education in Entrepreneurship and Innovation

Kenan-Flagler Business School offers extensive courses and training

- **Entrepreneurship major** for Business, **minor** for other students
- **Financial Literacy Workshop -** accounting & finance basics
- **Speaker series** featuring successful entrepreneurs, also offers networking
- **Women's Entrepreneurship Network -** helps women compete in a male dominated field
- **Center for Sustainable Enterprise** – seeks **triple bottom line**:
  - Financial profitability
  - Ecological integrity & sustainability
  - Social equity

‘Launching the Venture’ Course

- **Launching the Venture** - 3-part courses offered yearly
  - For serious **teams** with a new business or non-profit
    - Free for faculty and staff
    - Help find partners for single inventors
  - **Phase 1:** evaluate market **feasibility** and **patent/defensibility**

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  - **Phase 3:** How to **attract venture capital**

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  - For **teams** serious about a new business or non-profit
    - Free for faculty and staff
    - Help find partners for inventors without teams
  - **Phase 1:** Evaluate market **feasibility** and **patent/defensibility**
  - **Phase 2:** B**usiness planning** process for best ideas and teams
  - **Phase 3:** How to **attract venture capital**
  - Teams assemble **market and economic data and plans**, practice **presentations** to potential investors
  - **Experienced volunteer entrepreneurs** give consultation, advice, and key contacts

> 100 New Companies

Carolina Challenge

www.carolinachallenge.org/

Business and Social Venture competition

– Student led, annual

– Students, faculty or staff can compete

– Top 4 teams win $5,000 to $15,000 in donated prizes

2011 Finalists

Scientific: Rheomics, UVClean, Vivoxin, HTMD

Social: Artesenar, FAC, Life Improving Ventures, Musical Empowerment

Technological: Windsor Circle, Keona Health, Rascals, MarketPlates

Traditional: Teach Tech, ReDazzle, Green Pet, New Mind Education

Key Success Factors

- **Efficient, simple processes** to
  - **Register ideas and select the good ones**
  - **Pursue patents**
    - UNC: 487 US/720 foreign patents,10 trademarks

Examples from 164 available technologies:

•Gene Therapy Treatment of Glaucoma - **Biologic Therapeutics**
•Novel Anti-Tumor Colchicine Analogs – **Cancer**
•Improved Industrial Biocatalysts – **Chemistry**
•Physical Avatars of Real and Virtual People - **Computer Science**
•Hybrid Nanoparticles as Dual Therapeutic/Imaging Agents - **Drug Delivery**
•Concentrating Solar Power Plant **- Energy**
•Octapole Ion Trap Mass Spectrometer – **Instrumentation**
•Improved Fracture Fixation Device - **Medical/Surgical Devices**
•CCR5 Knockout Mice - **Mouse Models**
•Methods for Producing Recombinant Coronavirus - **Vaccine Development**

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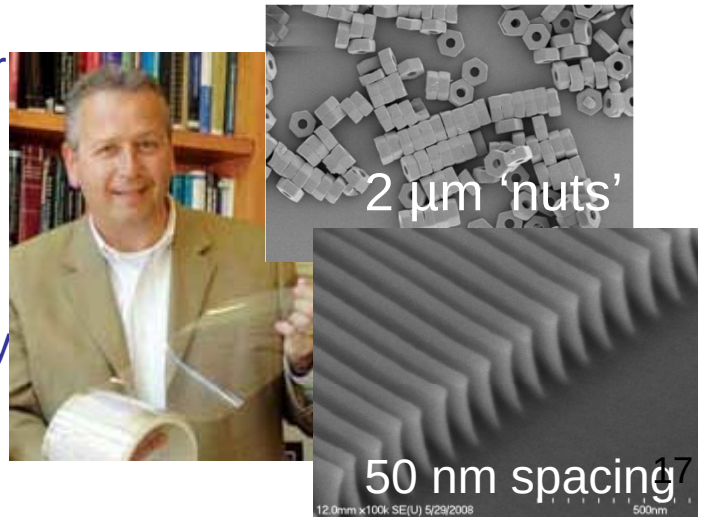
  - Create **clear agreements with fair incentives for**
    - **Inventors** (40% *vs 15% requirement*) and **investors**
    - Potential for **UNC** (20% funds OTD services)
  - Balanced, fair, and effective licensing **agreements** – 61.7/yr
    - **Carolina Express License** gives UNC 0.75 - 2% royalties

-DeSimone (UNC), Stack (Duke & Synecor LLC) develop 1st **biodegradable heart stent**; patent, sell to Guidant (Abbott) for $80M, on sale in Europe.

-DeSimone (UNC & Liquidia) developing **roll-to-roll molded nanoparticles** in many shapes and sizes, e.g.,vaccine products in clinical trials, >$60M raised



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- Active **funding networks:** venture, angel and other for start-ups
- **A few rules** and cultural **norms to control conflict of interest**
- Active **support networks** for education, information sharing, fund raising, communication
  - A **supportive culture** that encourages risk taking
  - **Active mentoring**

⇨ **42 current UNC start-ups,** 90 since 1970s, **>$600M raised**

Regional Resources - CED

Council for Entrepreneurial Development (CED - www.cednc.org/)

- **Mission:**
  - Identify, enable and promote **high-growth, high-impact companies**
  - Build an **entrepreneurial culture** in North Carolina and the Research Triangle.
- Founded in 1984
- Now 5000 members, both companies and individuals
- Provides education, mentoring and capital formation resources through **annual conferences**, **forums**, **workshops** and **programs**

Other Resources

- www.Entrepreneuredu.org - a **clearinghouse** of the best university entrepreneuring programs
- **NC Board of Science and Technology**, www.ncscitech.com/
  - Encourages, promotes, & supports scientific, engineering and industrial research applications in North Carolina
  - Organizes NC Nanotech Commercialization Conference, One NC Small Business Program, and NC Green Business Fund
- **Center of Innovation for Nanobiotechnology (**COIN) www.nc-coin.org, nonprofit, virtual center of innovation for networking opportunities, information, and tailored innovation services
- **Southeast Techinventures www.southeasttechinventures.com** and others work with university based inventors to accelerate commercialization and IP in high tech areas
- **UNC Office of Technology Development seminar archive** http://otd.unc.edu/news.php

INNOVATE @ CAROLINA

IMPORTANT IDEAS FOR A BETTER WORLD

Innovate.unc.edu

OTD Strategy & Offerings

Goal: Bring UNC technology to market

- Cradle to grave project management
- Decide on IP strategy and support patent filings
- Decide on collaboration, licensing, creating & licensing a start-up - or kill
- Negotiate with partners, licensees
- Assist creation of business plan, fundraising, management searching, brokering of interactions with potential partners and customers