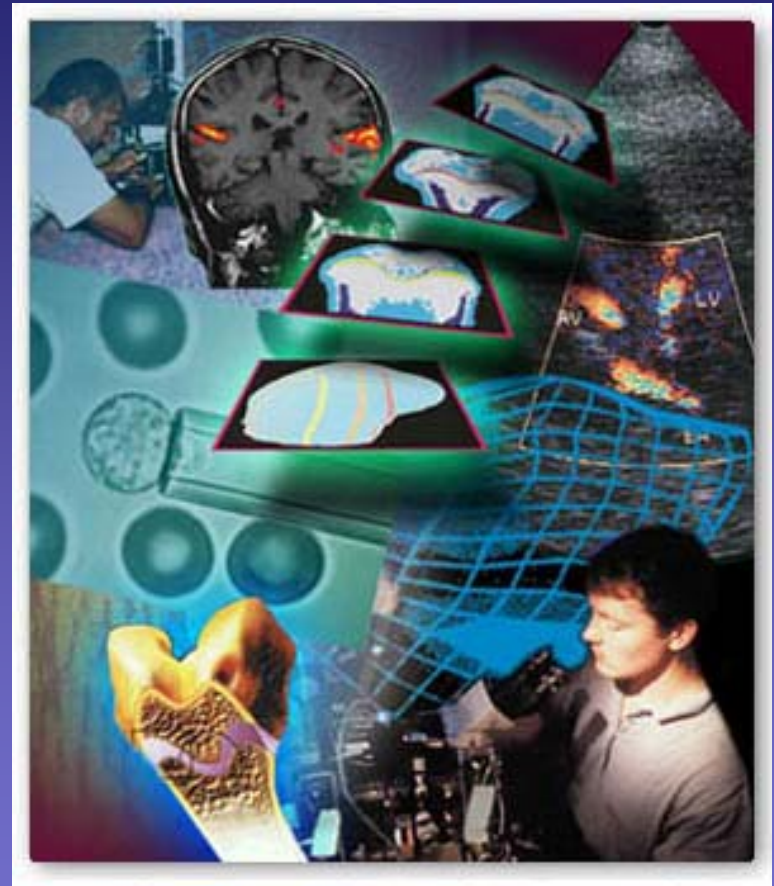


Virginia Tech

Capturing the Value of **Technology Transfer**

January 24, 2008

Virginia Tech Intellectual Properties



VISION

Technology Transfer Benefits Society



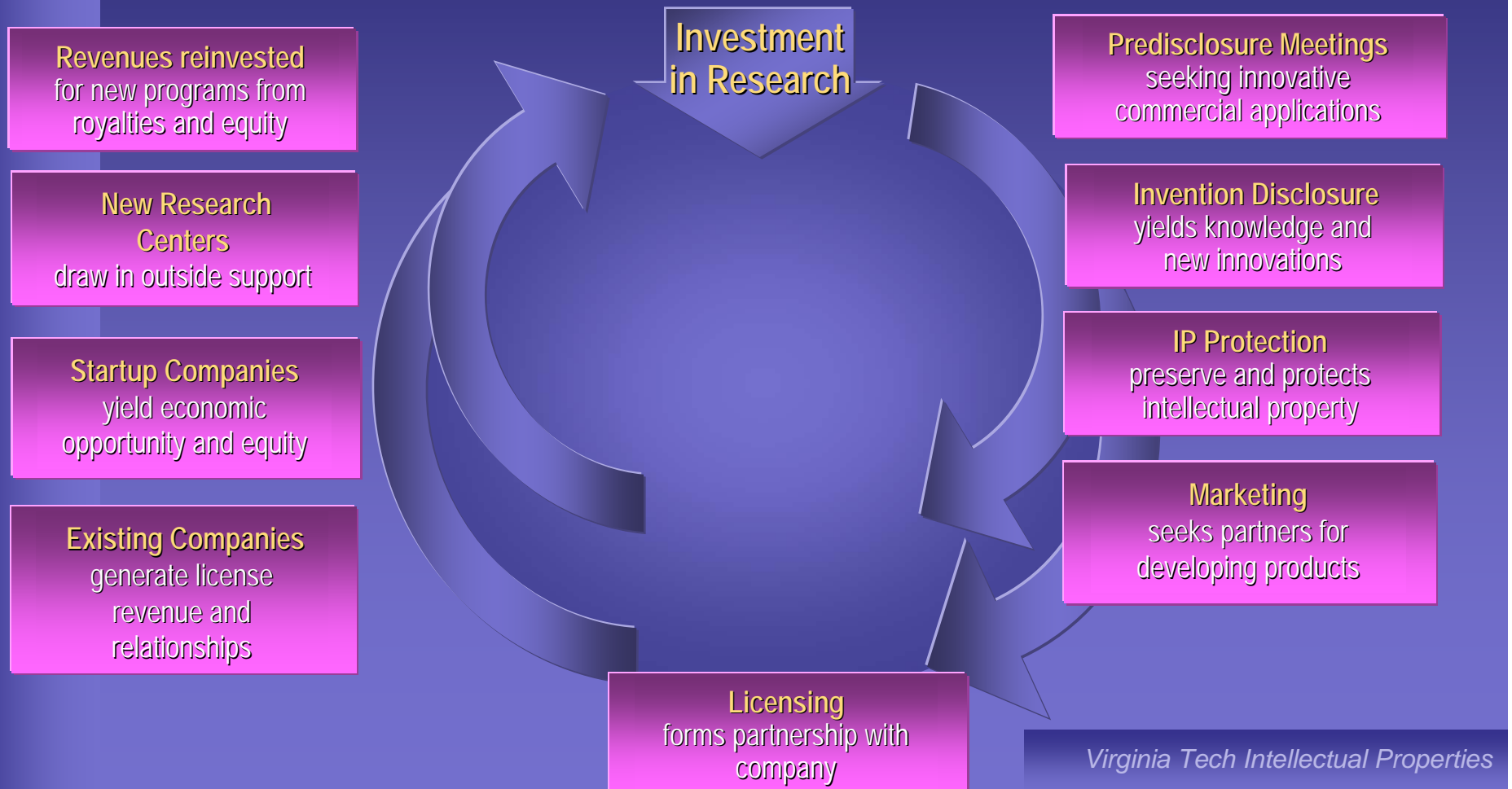
MISSION

Imagine the Possibilities

- Foster commercial investment in development of inventions and discoveries
- Through these investments – and the economic development and products that follow – provide direct benefit to public
- Generate connections and goodwill: faculty, sponsors, licensees
- Reap financial benefit to VT and inventors

PROCESS

Investment in Research Is Creating “Self Sustaining” Engine



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Myths

- Royalties are a significant source of revenue for Virginia Tech
- Expect a quick return of technology transfer investment
- Companies are eager to accept new technology from universities
- You should broadcast availability of technology for licensing
- The technology transfer office finds the licensee

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Reality

- With the exception of the occasional “blockbuster”, licensing revenue is usually small
- Don't expect product royalties for 8 -10 years
- Most companies want quick time-to-market
- Publishing lists of available technology is not effective
- The inventor is the best source for leads

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VTIP Approach

- Primary objective is technology transfer, not to maximize income
- Leverage intellectual property
- License exclusively in field of use
- Don't let greed obstruct license agreement
- Modest royalties geared to product success
- Establish an on-going relationship with licensees

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Success Factors

- Quality technology and applied nature of research
- Enthusiastic and cooperative inventors
- Experienced, technically trained, business-oriented staff with industrial experience
- Clear policy, straightforward procedures – rapid and efficient
- Flexible terms, customer focused
- Willingness to adapt to changing circumstances

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Environmental Factors

- Financial – gap, angel, seed, venture capital
- Contract services – design, prototype, manufacture
- Supportive culture – business friendly, entrepreneur network, seed capital network, start-up clinics
- Legal/accounting/business services – low cost, mentoring aspects

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Marketing Factors

- Targeted marketing
 - Focus on very few companies
 - Build relationships with inventors; licensees; entrepreneurs; gap, angel, seed and venture funding
 - Follow-up inquiries
 - Be approachable
 - Answer and use the telephone

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License Agreement Factors

- Given a potential licensee, tailor terms to fit
 - Shared risk
 - Low initial fees
 - Equity in partial-lieu of royalty
 - Modest royalty rates
 - Diligence provisions
 - Investment, personnel, milestones (development and sales), sublicensing requirements

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University Factors

- Strong support for technology transfer office
 - Ability to hire experienced staff
 - Financial support for office infrastructure
 - Long-term investment in patents
 - Willingness to stand behind aggressive enforcement of license and patent rights
 - Internal champion for entrepreneurship and technology transfer

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Incentives for University

- Follow-on technology development
- Institutional recognition
- Additional sponsored research
- Royalty income
 - Recover patent costs
 - License issue fees
 - Royalty income
 - Equity
- Employment for graduates
- Local economic development
- Political support: local, regional, national

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Incentives for Inventors

- Research > Invention
 - Becomes useful product
- Opportunity to consult
- Equity position in start-up
 - Inventor wants company to succeed
- Royalty income
 - Inventor wants product to succeed

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Incentives for Companies

- Source of new technology
- Lower cost product development
- Patent position – exclusivity
- Easier to raise investment capital
- Shorter time-to-market
- Low-cost access to technical expert

RESOURCES

VTIP Licensing

- Greg Hess, Senior Licensing Associate
 - Ag/Life Sciences; Leading Commercialization Firm (BTG)
- John Geikler, Senior Licensing Associate
 - Engineering; RTI/Research Triangle; Software Experience
- Michael Miller, Senior Licensing Manager
 - Engineering; Local Technology Business Experience
- Jackie Reed, Licensing Associate
 - Microbiology/Life Sciences; Startup Experience
- John Talerico, Licensing Associate
 - Engineering; Pamplin MBA; Previous VTIP Intern

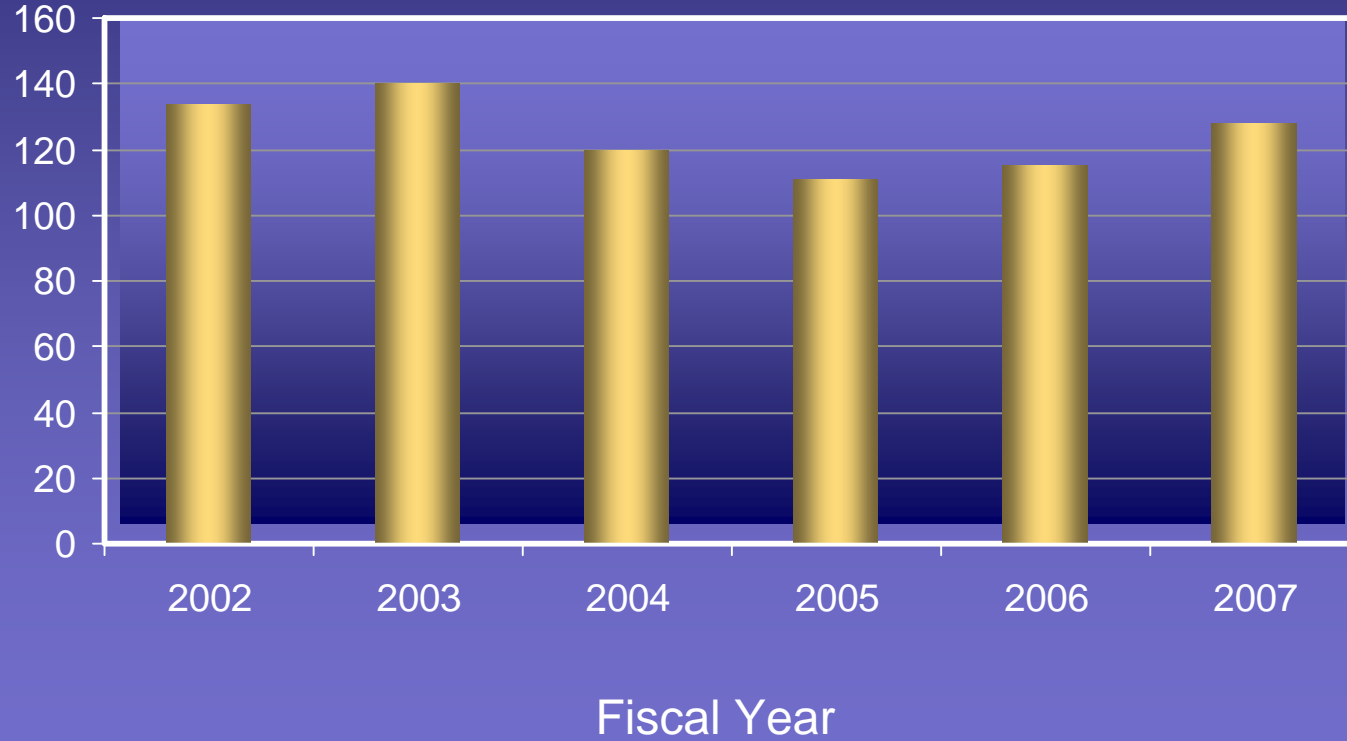
RESOURCES

VTIP Support

- Lisa Akers, Accounting and Licensing Specialist
 - B.S. in Accounting; over 14 years experience as business accountant
- Naomi Lewis, IP Coordinator
 - Patent prosecution facilitator; over 20 years administrative experience
- Margaret Rose, Controller/Director of Business Affairs
 - Accounting degree from Virginia Tech; over 20 years experience in university business administration
- Five Student Interns
 - Real world experience; Extremely helpful

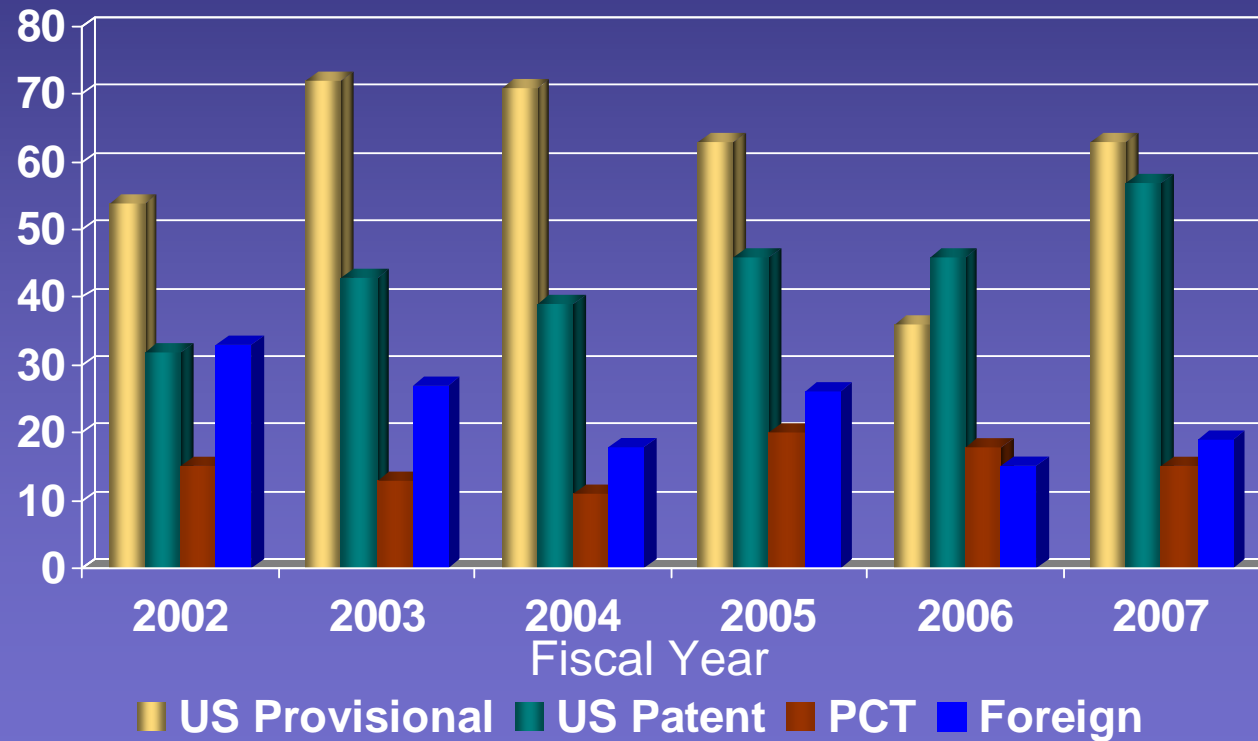
TECH TRANSFER RESULTS

Invention Disclosures



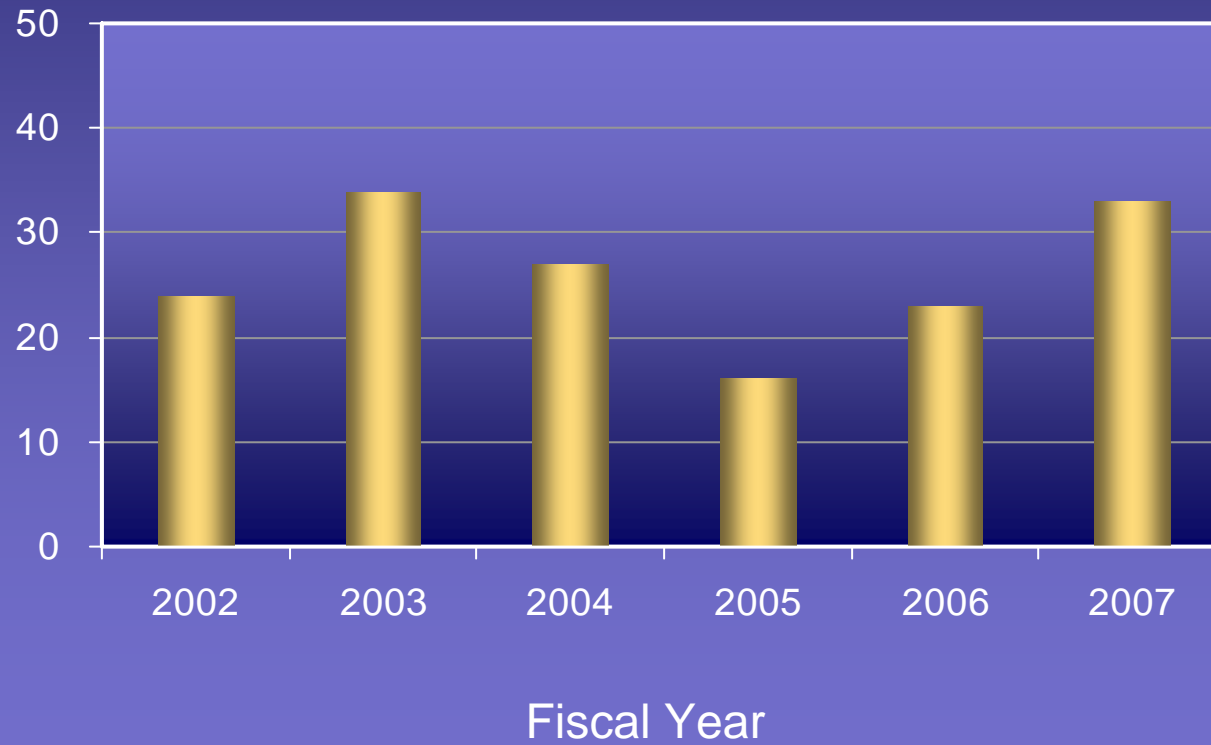
TECH TRANSFER RESULTS

Patent Filings



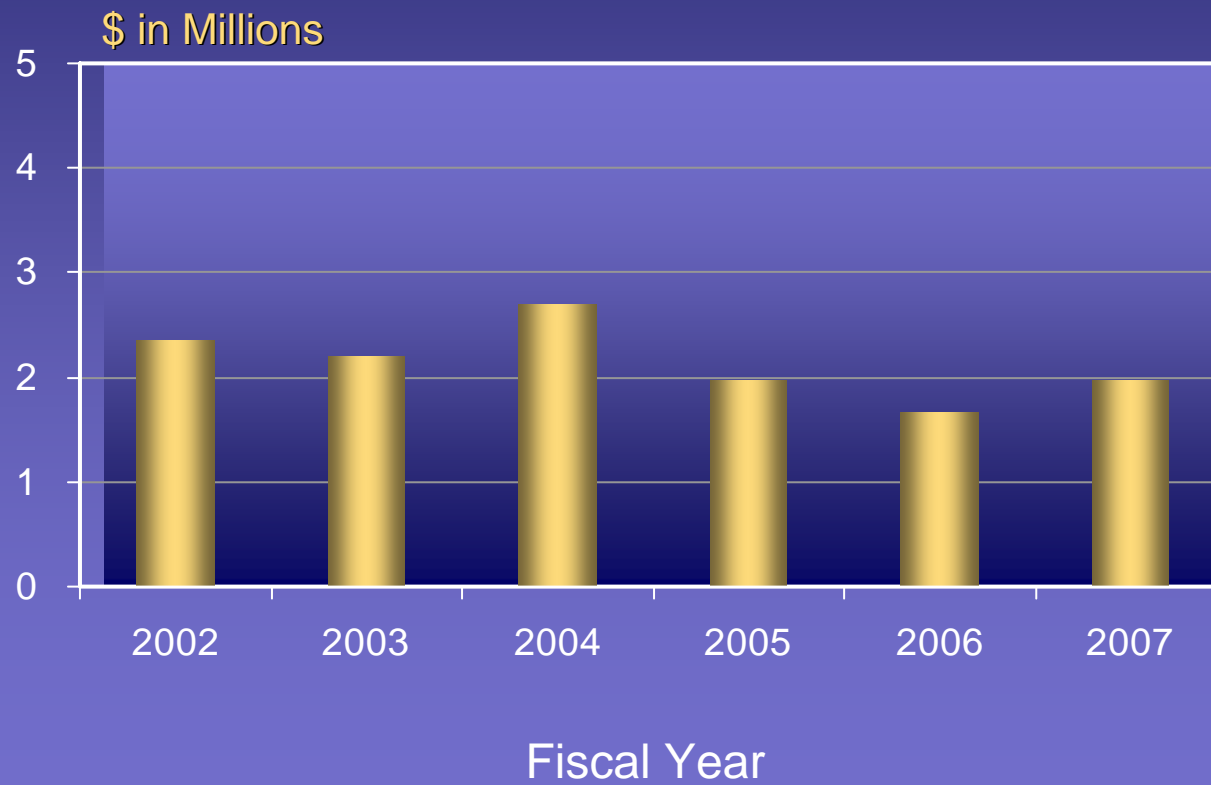
TECH TRANSFER RESULTS

US Patents Issued



TECH TRANSFER RESULTS

Licensing Revenues



TECH TRANSFER RESULTS

Startups

- NBE Tech – Nanomaterials in paste form used for interconnecting semiconductor devices
- MiserWare – monitors and controls power and energy consumption in server-based systems
- TranSecurity – In-vehicle data collection and safety system platform
- Microfluidics Newco – R&D and clinical applications in cancer/biomarker screening
- Discover – Small actuators for portable electronic devices
- Immunutrix – targets anti-obesity, naturally occurring compounds regulating the glycemic index

TECH TRANSFER RESULTS

More Startups

- Antelope Diagnostics – Production of allergens and proteins for diagnostic applications
- VTCLI – Embedded leadership and professional development platforms
- Cyto-IQ – High content screening, cellular assays, transcriptional network modeling R&D
- EMPS – Renewable energy applications of the world's most efficient electronic power converters and inverters
- ProGenetics – Transgenic proteins used in blood disorders
- Dynasoft – Complex product flow scenarios
- Spherosils – Thin silica films on silicon substrates for use in microelectronics

TECH TRANSFER RESULTS

Some Cool Technologies

- Gravia – Lamp that has a built in power source
- HG Blanket – Next generation active/passive distributed absorber for vibration and sound radiation control
- V2T – Harnessing the wind to secure commercial roofing
- Computer Backpack – Laptop carrying case for workers on the move
- Transgenic plant expression system – Therapeutic for Gaucher's disease

LOOKING AHEAD

Tech Transfer Opportunities in 2008

- Discovery based predisclosure briefings with inventors
- Focus on Virginia Tech strengths/sector driven marketing and publicity
- Directed company and technology pull conferences
- Stronger commercial connections via entrepreneurs-in-residence/CRC focused visits
- Facilitating Virginia Tech/Industry research collaborations
- Campus workshops in technology transfer and commercialization (“Patents and Pizza”, “Learn at Lunch”)
- Innovation pull workshops for faculty and students
- Facilitating NewVA mentorship and entrepreneurial culture

LOOKING AHEAD

Lessons for Entrepreneurial-Engaged Universities

- A strong and focused university research base provides the pipeline for transferring and commercializing Virginia Tech technologies, and launching start-up enterprises. How do we match with strengths in the community?
- Champions are key to creating an entrepreneurial climate in and around the university. How do we foster and encourage?
- Risk capital and mentors are critical ingredients in licensing and launching university-based start-up enterprises. How can we enhance opportunities for entrepreneurs and investors to prepare for and network with inventors.

LOOKING AHEAD

Conclusions

- Technology transfer is a *sustainable* service to foster innovation
- We focus on targeted marketing of inventions
- We create favorable license terms to induce investment
- We hope we will become a powerful contributor to economic development