

# Ownership of Intellectual Property Developed at State Universities Through Industry-Sponsored Research

## JOINT SUBCOMMITTEE STUDYING MANUFACTURING NEEDS AND THE FUTURE OF MANUFACTURING IN VIRGINIA PURSUANT TO SJR 64

Wednesday, November 17, 2004

### **1. Introduction**

- Who should have the right to own any IP that is developed at a state university through industry-sponsored research: The university that provided facilities and faculty talent? Or the private firm that provided funding for the research project?
- Report of the Secretary of Technology, CIT, and VRTAC (House Document 25 of 2003, at p. 7) summarizes interpretations of applicable law:

University inventions made using state funds ("substantial state resources") are the property of the Commonwealth, with ownership lodged in the universities. Under existing law, title to such inventions can be transferred only to the [CIT], to a nonprofit foundation established for the benefit of the university, or to other entities upon the personal approval of the Governor. Title, therefore, cannot be assigned to private entities. Furthermore, even if the research leading to the invention is made using private funds granted to the university, the Commonwealth treats such funds, when expended, as state funds, so title to such inventions can only be assigned under the conditions named above.

- Technology transfer and the commercialization of intellectual property developed at state universities (regardless of sponsor) have been recognized as important contributors to economic vitality.
- Typical technology transfer steps:
  1. A faculty member, graduate student or staff of a university submits an invention disclosure to the university's office of technology licensing (OTL).
  2. The inventors in effect assign the rights to their intellectual property to the university.
  3. The OTL evaluates the invention's economic prospects and decides whether to protect the IP by securing a patent, copyright or trademark or by keeping the invention a trade secret. Patenting is often done concurrently with the publication of the research results.
  4. A company secures a license to commercialize the technology, which does not grant the right to use or sell the invention, but is an agreement not to sue for patent infringement.
- Typically the results of a sponsored research arrangement are owned by the university and industrial sponsors are granted an exclusive option to license patents arising from the research. Universities policies commonly state that the university owns all patents developed using university facilities under a sponsored research agreement.<sup>1</sup>

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<sup>1</sup> November 30, 1993 - Council on Governmental Relations (association of research universities)

## **2. Sponsored Research and Technology Transfer**

Per a 2000 survey by the Association of University Technology Managers:

- Sponsored research expenditures totaled \$29.5 billion, of which \$18.1 billion came from the federal government and \$2.7 billion from industry (which was up from \$236 million in 1980 and \$1.3 billion in 1992).
- Respondents disclosed more than 13,000 invention from sponsored research, about 6,400 new U.S. patent applications filed, about 4,300 new licenses and options executed (two-thirds with startups and small businesses (fewer than 500 employees) and one-third with large businesses).
- Respondents had about 21,000 active licenses and options, of which about 9,000 yielded income (such as license fees, milestone payments and royalties) totaling about \$1.26 billion.

Nationally, industry support for research and development at universities represents less than 7% of the total funding of university-based research. While small compared to the 60% provided by federal agencies, this private investment in the creativity of universities, including professors, students and staff, drives a form of technology transfer that is increasingly important to industry.

In House Document 25 (2003), VRTAC reported:

- It is important to the growth of technology-based industry in Virginia that the Commonwealth's universities have a well-functioning system for making patents available for use by industry under licenses to existing firms or through active participation in building new firms around those patents.
- There is a widespread belief that Virginia's universities could provide substantially greater impetus to economic development and growth in the Commonwealth by growing and strengthening their research programs, by better focusing their research in fields with potential industrial application, and by accelerating the commercialization of the results of the research that they perform.
- The complexity of the system of research universities in Virginia is a factor in technology transfer. Since no one of the institutions dominates or is especially large, and since each institution operates as an independent agency of the Commonwealth with its own statements of policies and procedures, its own organizational structure, and relatively limited state-wide oversight and strategic direction, it is very difficult for industry to access the research capabilities and results that do exist.
- Virginia "must do a better job commercializing university and federal lab originated intellectual property." Less than 1percent of Virginia's technology start-ups spin out from the technology developed at Virginia's state university labs.

### **3. Quantifying Intellectual Property Activities at Virginia Universities**

#### Intellectual Property-related Activities at Three Virginia Universities (FY 1999)

	UVA Patent Foundation	Virginia Commonwealth University	Virginia Tech Intellectual Properties, Inc.
Disclosures received	154	91	74
Licenses executed	20	14	41
Gross license income received	\$4,185,446	\$112,000	\$1,328,343
Sponsored research expenditures	\$197,046,500	\$105,000,000	Not available

Source: Senate Document 25 (2000), Table 4, p. 35.

#### Comparison of Virginia IP Activities to U.S. Totals

	US	Virginia*	Virginia Percentage
Invention disclosures	15,573	502	3
Patents filed	7,741	352	4.5
New licenses	4,673	96	2
Total revenues	\$1 billion	\$8.9 million	0.9

\* Excludes W&M, ODU, and JMU

Source: Academic Licensing Community of Virginia Presentation to VRTAC, May 18, 2004

Licensing revenue at VA and Virginia Tech has been increasing in recent years. The UVA Patent Foundation reported that for fiscal year 2001, it executed 52 licenses, options, and other agreements, and had \$7.5 million in royalty income. VTIP's revenue from licensing IP increased from \$1.5 million in fiscal year 2000 to \$2.3 million in 2003. For comparison, note that in fiscal year 1997 Stanford University earned \$52 million and MIT earned \$21.1 million in license income.

Senate Document 32 of 2001 reported:

- Virginia ranks 17th among the states and the District of Columbia in R&D expenditures at doctoral-granting universities in 1998, with spending of \$482 million
- Federal funding accounted for nearly 60 percent of R&D funding at these institutions, while industry accounted for 9.5 percent

#### 4. Summary of Concerns and Positions of Industry and Universities

<b>Industry</b>	<b>Universities</b>
1. Businesses want the ability own the IP they've paid for by funding research	1. Ownership isn't really an issue to the firms that develop the IP; they can obtain the functional equivalent in the form of exclusive long-term license agreements. It is only an issue to firms that have an exit strategy of being bought out or seek to sell bundled patents to third parties. The results of the research funded by corporate sponsors is available to them for commercial exploitation through license agreements, the scope of which may range from a nonexclusive, royalty-free right to use the results for internal purposes to an exclusive royalty-bearing license for commercial applications. Assigning ownership of IP to private entities may trigger repercussions under federal tax law
2. Investors want the companies to own the IP. For small high-tech start-ups, the IP is a company's only real asset, and firms need to be able to leverage the IP in order to raise capital	IP resulting from sponsored research can be used in financial markets if have a license - not only if the IP is owned
3. Universities don't have the resources or strong desire to actively enforce IP rights against infringement	License agreements can address who can sue for infringement. In exclusive license agreement, give the licensee the first option to sue for enforcement
4. Licensing fees are unreasonably high, particularly regarding charges for overhead	Royalty rates are dependent upon market factors and determined through negotiation. While defining an "average" royalty rate will not reflect the true value of an invention, one study cites an average royalty at approximately 2% of the revenues generated by a licensee-company from its sales of products or services under the license. As alternative to requiring payment of license fees, university foundations are taking equity positions in start-ups. Percentage ranges from 5-10 % plus royalty payments down the road, to 20-50 % with no royalty payments.
5. Companies have been told assignment is prohibited, but believe that universities have always had the capability to transfer ownership to the companies that pay for the research - but they do not want to do it.	Under present interpretations of state statutes and guidelines, state universities operate under the principle that they are unable to assign title to the companies without the consent of the Governor

<p>6. Sense that the process is unreasonably difficult, and not worth dealing with. Businesses are very frustrated with universities whose policies discourage private sponsored research. Each university has separate policies and offices; the lack of uniformity creates confusion.</p>	<p>The pact between university and the public demands accountability for use of resources provided at public expense, and imposes an obligation upon universities to ensure that the public receives a benefit from its investment. By maintaining control of IP, universities allow commercial use while keeping the ability to continue research in the area and to disseminate knowledge to students and the public. If IP is assigned to a sponsor, it gives up all rights to use the IP for further research or in teaching. By retaining title, universities can require licensees to make diligent efforts toward commercializing. Through licensing, universities ensure diligent efforts toward commercialization by the licensee, or require the license to be returned to the university to be issued to a more serious commercial partner.</p>
<p>7. No one has ever requested the Governor for permission to transfer IP to a private firm</p>	
<p>8. "Background" IP is claimed by universities</p>	

## **5. Patent Law Issues**

- In a collaborative arrangement, where employees of the sponsor are working collaboratively and in parallel with the PI on the research and sharing information, there are likely to be joint inventions. These are generally jointly-owned, with the sponsor having the right to license the university's interest. The university generally has no rights in the sponsor's interest in jointly-owned inventions, except perhaps a non-exclusive license limited to internal research work, usually within the scope of the funding agreement.
- The sponsor owns any inventions made solely by its employees, with the university generally having no rights. Ownership of inventions is generally governed by the U.S. rules for inventorship of patents (in other words, ownership follows the inventors named in the patent application).<sup>2</sup>
- Patents are granted only to the true inventor, who may sell all or part of his/her interest in the patent application or patent to anyone by a properly worded assignment.
- Title by occupancy that an inventor acquires when he invents is not affected by the fact that the inventor is at the time in the employ of another; persons employed are entitled to their own independent inventions.
- If an employee is hired specifically to engage in R&D work or to discover and develop a specific invention, even without a written employment agreement, an employer may own rights to an employee-created invention under the "employed-to-invent" doctrine.
- Typically, employee-inventors who invent something in the course of their employment are bound by employment agreements that automatically assign all rights in the invention to the employer.
- An employer may acquire a limited right, known as a "shop right," to use the employee's innovation without paying the employee-inventor, but does not acquire ownership of the patent or trade secret. A shop right arises where the employee-inventor uses the employer's resources (materials, supplies, time) to create an invention.

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<sup>2</sup> "Special Contractual and Intellectual Property Rights Considerations: Sponsored Research Agreements University and Government Licensing Clinical Trial Agreements," Jeffrey P. Somers, Morse, Barnes-Brown & Pendleton, P.C.

## **6. Bayh-Dole Act and Federal-sponsored research**

- The Bayh-Dole Act of 1980 spurred interest in the transfer of new technology from university laboratories to the private sector.
- The Bayh-Dole Act was enacted to address concerns that federal agencies were reluctant to permit ownership of inventions to vest in universities and other recipients of federal grants.

Prior to Bayh-Dole, the government retained title and made these inventions available through non-exclusive licenses to anyone who wanted to use them. Because competitors could also acquire licenses and then manufacture and sell the same products, companies were reluctant to invest in and develop new products. Accordingly, the government failed to attract private industry to license government-owned patents.

- The legislation provides incentives for the university and the individual scientist to protect and commercialize intellectual property.

Universities may elect to take title to inventions made with federal funds.

Title to such inventions may not be assigned to private entities.

The Act permits exclusive licensing when combined with diligent development and transfer of an invention to the marketplace for the public good.

- With the passage of the Bayh-Dole Act, colleges and universities began to develop the expertise needed to effectively engage in the patenting and licensing of inventions.

Growing numbers of universities have formed technology transfer programs that have licensed inventions made with federal support to commercial partners.

- Importance of Bayh-Dole to the issue of ownership of IP:

Universities generally are prohibited from assigning IP developed from federally-funded research to private entities. Much more research is sponsored by federal government than by private industry, so institutions may be more comfortable dealing with the issue of IP ownership in the same manner for all sponsors.

## **7. Current Virginia Law**

- Virginia Code § 2.2-2822:

Patents, copyrights or materials that were potentially patentable or copyrightable developed by a state employee during working hours or within the scope of his employment or when using state-owned or state-controlled facilities shall be the property of the Commonwealth. The Governor shall set such policies as he deems necessary to implement this section.

This section shall not apply to employees of public institutions of higher education who shall be subject to the patent and copyright policies of the institution employing them.

Since all of Virginia's research institutions of higher education have a patent and copyright policy, § 2.2-2822 does not apply to them.

- Virginia Code § 23-4.3:

State universities are required to adopt patent and copyright policies consistent with the policy guidelines promulgated by the State Council of Higher Education pursuant to § 23-9.10:4.

Employees of state institutions of higher education are bound by the policies.

Anyone using facilities of a state-supported institution who has not otherwise entered into a written contract with the institution concerning such use shall be subject to the policies if the use constitutes a "significant use of the institution's facilities."

- Virginia Code § 23-4.4:

### Subsection A:

The Board of Visitors may transfer any interest in patents and copyrights, but the Governor's prior written approval shall be required for transfers of such property if developed:

1. "Wholly or significantly through the use of state general funds" and
2. Either
  - (i) such property was developed by an employee of the institution acting "within the scope of his assigned duties", or
  - (ii) such property is to be transferred to an entity other than the Innovative Technology Authority, an entity whose purpose is to manage intellectual properties on behalf of nonprofit organizations, colleges and universities, or an entity whose purpose is to benefit the respective institutions.

The Governor may attach conditions to these transfers as he deems necessary.



SCHEV is required to adopt a uniform statement defining (i) the conditions under which a "significant use of general funds" occurs and (ii) the circumstances constituting an "assigned duty." The terms are defined in the SCHEV guidelines.

- Most institutions interpret "significant use of general funds" as meaning any amount in excess of the \$10,000 limit per year established in the Conflicts of Interest Act.
- If a principal investigator's salary is used in this analysis, for all practical purposes the ownership of the intellectual property will always reside with the institution of higher education and may not be transferred to the industry sponsor without the Governor's approval.

Subsection B: (Added 2003 --House Bill 2285 introduced by then-Delegate Devolites)

The Governor's approval is not required to transfer patents or copyrights to a private entity if:

- (i) the interest was developed without the use of federal funds,
- (ii) such entity makes a clear and convincing case to the relevant board that its ownership of the interest is critical to its ability to commercialize that interest, and
- (iii) the institution receives, at a minimum, compensation equal to the anticipated revenue stream of licensing the interest.

This bill enacted recommendation #5 of the VRTAC's Intellectual Property Committee in House Document 25 (2003) that university boards of visitors be authorized to assign title to university-owned inventions to industrial firms under limited circumstances.

- Virginia Code § 23-9.10:4:

SCHEV is required to promulgate and, from time to time, revise patent and copyright policy guidelines for state-supported institutions of higher education.

- Other legislation

House Bill 2283 (2003), introduced by Delegate Devolites, amended § 2.2-3106 to authorize the board of visitors of any public institution of higher education in Virginia or the Eastern Virginia Medical School to delegate to the president of the institution its authority to grant waivers to the conflict of interests statute for contracts between a business in which the employee has a personal interest and the institution for a contract for research and development or commercialization of intellectual property. This implemented the recommendation in the report by VRTAC's Intellectual Property Committee in response to House Bill 530 and House Joint Resolution 88 for measures to facilitate conflict of interest waivers for research and technology commercialization.

## **8. SCHEV Guidelines**

Pursuant to the directive of § 23-9.10:4, SCHEV adopted guidelines for the development of patent and copyright policies and procedures by state-supported of higher education on June 3, 1987. The guidelines include definitions of:

Intellectual property -- Anything developed by anyone covered by an institution's intellectual property policy that fits one or more of the following categories:

- a potentially patentable machine, article of manufacture, composition of matter, process, or improvement in any of those; or
- an issued patent; or
- a legal right that inheres in a patent; or
- anything that is copyrightable (in legal terms, this means anything that is an original work of authorship, fixed in a tangible medium of expression).

Significant use of general funds -- This phrase, and the phrase "developed wholly or significantly through the use of general funds," means that general funds provided \$10,000 or more of the identifiable resources used to develop a particular intellectual property. A reasonable cost should be assigned to those resources for which a cost figure is not readily available, such as salary, support staff, and other equipment and resources dedicated to the creator's efforts. Resources such as libraries that are available to employees generally should not be counted in the assessment of the use of general funds.

Guideline 3.2 addresses ownership if intellectual property:

"Each institution should specify the types of intellectual property in which it will claim an interest and specify the procedures for claiming or disclaiming the interest."

The commentary recognizes that "those employees who are not hired to invent own the right to apply for and hold patents to their inventions. If an institution wants to change that outcome, it must do so either in a contractual agreement reached before the employee accepts employment, or by a notice to employees that applies to all inventions conceived after the date of the notice."

Guideline 4 addresses transfers of intellectual property:

"Except when the Governor's prior written consent is required, an institution's governing board . . . may transfer any intellectual property in which an institution claims an interest."

"Institutions need not claim an interest in all intellectual property in which they might legally be able to assert an interest."

## **9. Previous Studies of Related Issues**

Senate Joint Resolution 502 (1999) (Couric) requested the Secretary of Technology, in consultation with institutions of higher education and others, to study and develop a coordinated research and development policy for the Commonwealth. The Secretary's findings and recommendations were directed to include the identification of any barriers and obstacles for greater collaboration and a review of the intellectual property policies and procedures of the institutions of higher education and federal laboratories, incentives to participate in joint ventures, and best practices by which intellectual resources can be linked to commercialization to benefit the economy of Virginia.

The results of the study directed by SJR 502 were presented in three reports:

- An Assessment of the Intellectual Property Policies and Practices in Virginia's Public Universities and Federal Laboratories, presented as an interim report by the Secretary of Technology (Senate Document 25 of 2000).
- An Industrial Cluster Analysis of the Virginia Economy, presented as an interim report by the Secretary of Technology (Senate Document 26 of 2000).
- Developing Virginia's Research & Development Strategy and Improving the Intellectual Property Policies of our Universities and Federal Labs (Senate Document 32 of 2001).

### A. Senate Document 25 of 2000:

"An Assessment of the Intellectual Property Policies and Practices in Virginia's Public Universities and Federal Laboratories" identified five issues related to the transfer of intellectual property to the private sector:

1. The apparent conflict of interest between the role of the university and the commercialization of intellectual property.
  2. The communication of technical expertise and intellectual property available.
  3. Streamlining the sponsored research and licensing processes.
  4. Ownership of intellectual property generated by Virginia's public universities.
  5. Enhancing the relationship between the university and corporations.
- The report states that the tension between the role of the university and the commercialization of intellectual property lies at the heart of many of the difficulties that are encountered during the process of commercializing ideas.

The issue involves whether the educational role of the university, which includes the assumption that a professor's autonomy and control applies to the laboratory as well as to the classroom, necessarily and inherently conflicts with its role as a licensor of intellectual property, which implies to some degree that what a professor does in the laboratory is for sale.

This conflict gives rise to disagreement over who should own intellectual property: the professor who generated it, the university that employs the professor, or in the case of industry-sponsored research, the company that paid for it. As stated in the report (at p. 18):

"The viewpoint that corporate money and directed research subvert the educational goals of Virginia universities is inconsistent with the preferred concept of some business owners that the university serve as a contract research laboratory. This issue is one that requires education on both sides."

- An ancillary issue identified in the report is the business community's concern that the up-front costs, including overhead rates on sponsored research, are too high. Some of this cost is attributed to the need of the university's technology transfer officials to cover the costs of running the office.

Businesses feel that they should not have to pay for the transfer office or the university's facilities because their tax dollars already support these things. University officials indicate a sentiment that since the commercialization of intellectual property is not the primary mission of a university, it should not be supported by tuition revenue but should be separately funded.

Universities are accustomed to the federal government paying overhead rates on sponsored research contracts. Indirect costs are set by the federal government on an annual basis, and at the time of the report the rate was 48 percent. Universities have attempted to utilize the same overhead rate structure on sponsored research contracts with businesses, sometimes regardless of the company's size or ability to pay. One way to reduce the overhead costs that has been identified by the business community is to identify funding sources for licensing offices, such as general funds, so that the offices would not feel pressured to recover their costs when negotiating with businesses.

- Institutions outside Virginia that are regarded as having best practices argued strongly that the state should never give up ownership of IP and that business leaders should be better educated that the bundle of rights they can negotiate under a license agreement can give them "about 95 percent of the rights of ownership."
- The ownership of intellectual property generated by sponsored research developed through privately funded research at Virginia's public universities is identified as a critical issue.

Some institutions were reported as taking the position that they cannot assign intellectual property to any third party other than the 501(c)(3) foundations that manage the IP.

This seems to be generated by the lack of clarity regarding the phrase in § 23-4.4 that requires the Governor's approval of assignments of IP developed "wholly or significantly through the use of state general funds."

This position may also be based on interpretations of the Bayh-Dole Act and federal tax laws, including the Federal Tax Free Bond Act of 1986, which imposed a 10 percent limit on the amount of tax-free bonds that may be used for "private use." Under one view, the sponsorship of research by a private firm in a facility funded with the proceeds of these tax-free bonds would count towards the 10 percent cap if it received the benefits of the research without paying fair market value for the IP.

- Corporations are reportedly frustrated by the unwillingness of universities to address their need for ownership of the IP. Many high-tech start-ups and spin-offs rely on ownership of IP to obtain financing. Companies are also concerned that if they are not the owners of IP, they will not be able to use the fact of ownership as a barrier against their competition. Specifically, some may fear that a university may not be able to afford ensuing enforcement litigation or will not have the same goals as the company.
- The report acknowledges that there is disagreement over whether the Commonwealth is and should be interested in every piece of IP developed with general funds. The authors suggest that the existing paradigm should shift from one where the Commonwealth's primary goal is to enable dissemination of the IP rather than to control it. **This could be accomplished in part by creating a system where there is a presumption that IP may be assigned to a private entity as long as there is no strong public policy reason for not doing so, which would effectively flip the presumption in § 23-4.4.**

The report identifies several models of different contexts of IP ownership and possible resolutions of the ownership issue.

- IP developed with no significant use of general funds, or with a significant use of general funds but there is no strong Commonwealth interest in the IP such as health, safety or welfare, could be assigned.
- IP developed with private funding or through other unidentified funds could be assigned if there was no strong Commonwealth interest.
- A related issue is the need to streamline the sponsored research and licensing process. The course of negotiating a research deal can involve negotiations with the principal investigator, the sponsored research office (responsible for the submission and oversight of contracts for sponsored research, and the licensing office (responsible for technology dissemination under licensing agreements).

As of the date of the report, at the University of Virginia, Virginia Tech, and Virginia Commonwealth University, these entities are legally distinct bodies that cooperate with each other, while at George Mason University they were combined in one office.

Corporations would prefer one technology transfer procedure that is implemented identically at each public university. The authors of the report state that this is not feasible given the tradition of institutional autonomy within the Commonwealth and the need to develop policies and procedures that are efficient in a specific campus context.

Alternative solutions include (i) identifying one contact person at each university whose role would be to communicate with a company during the licensing process, funded by the Commonwealth, to facilitate the successful technology transfer between universities and private corporations; and (ii) horizontally integrating the roles of sponsored research office and licensing office, to reduce the number of negotiations that are required and to speed up the process.

## B. Senate Document 26 of 2000:

In response to one of the several charges in SJR 502 (1999), the Secretary of Technology prepared an Industrial Cluster Analysis of the Virginia Economy.

A major strategic research and technology policy goal identified by the Secretary of Technology was to improve the environment and opportunities in Virginia universities for creating innovative start-up companies that will drive new growth. Virginia's research universities were found to be conducting significant research in fields of importance to existing and emerging industries. Strong linkages and effective cooperation between this research base and the industries that can convert research results into products, jobs and revenue are essential to the Commonwealth fully benefiting from its outstanding universities.

## C. Senate Document 32 of 2001:

The second year of study under SJR 502 (1999) generated a two-part report. The first part, prepared by the VRTAC and CIT, recommends a statewide R&D strategy for the Commonwealth. It includes an analysis identifying high-tech growth opportunities in Virginia prepared by Chmura Economics & Analytics. The second part consists of recommendations for improving the intellectual property policies and practices in Virginia's public universities and federal laboratories.

### Part 1:

The recommended R&D strategy for Virginia recognizes that Virginia's future economic competitiveness will depend on developing the highest quality intellectual property and human capital, and that the major avenues for developing them are by performing research and developing products in federal, university/nonprofit or industrial installations.

One of the report's five recommendations is to change existing intellectual property law to simplify and streamline university-industry interactions, including the transfer of patent ownership. The authors assert that the most important change Virginia universities could make is to develop a simple, statewide framework for the transfer or licensing of IP to companies.

**Statutes should be amended to allow university board of visitors to transfer patents to companies on a case-by-case basis rather than requiring the approval of the Governor.**

### Part 2:

The Intellectual Property Subcommittee of VRTAC recommended:

2. To simplify regulation and to speed up the development of industry/university partnerships, **the Virginia legislature should delete all sentences beyond the first in §23-4.4 of the Virginia Code, allowing the Universities' Boards of Visitors the ability to assign companies the ownership of Intellectual Property developed at the Universities.**

- The authors cited the appearance of "significant confusion between industry and universities on whether IP generated either collaboratively with industry or solely at the university can be assigned to private industry."
  - Several universities interpret § 23-4.4 for the position that they cannot assign IP to any third party other than the tax-exempt foundations that manage the IP.
- While many larger firms are willing to accept exclusive licenses of IP, "IP can be a major asset of many high-tech start-ups and spin-offs who rely on its ownership as a means of leveraging financing."

#### D. House Document 25 (2003)

House Bill 530 (2002) directed VRTAC, in conjunction with CIT, the Office of the Attorney General and the research universities of the Commonwealth, to develop a statewide policy and uniform standard for the commercialization of intellectual property developed through university research.

House Joint Resolution 88 (2002) requested the Secretary of Technology, in cooperation with the CIT and VRTAC, to recommend incentives necessary to encourage the commercialization of university research and development.

The report, entitled "Accelerating the Commercialization of Virginia University Research Results through Improved Management of Intellectual Property," includes two recommendations specifically addressing the topic of ownership and dissemination of intellectual property developed through joint research projects:

- (i) Require Virginia's research universities to agree on, adopt, and promulgate a uniform statement of policy regarding technology transfer to industry.

The 7 public doctoral research universities in the Commonwealth, along with their associated intellectual property foundations, should agree on, adopt and promulgate publicly a uniform statement of their key policies that influence the terms and conditions under which they can (1) conduct research sponsored financially by industry and (2) transfer inventions made at the university to industry.

All of the Commonwealth's institutions of higher education conduct their technology transfer and commercialization activities under the same array of state and federal laws. However, each has adopted internal policies and procedures at different times and in different circumstances, and each has arrived at final wording and presentation of its policies as a result of different local resolutions of competing interests and preferences of faculty, administrators, boards, and external advisors. The result is that, to companies considering supporting research at Virginia institutions or considering taking a license to a university invention, it appears that the universities do not follow uniform standards and policies.

The universities, working with ALCOVE and the intellectual property foundation officials, should develop a common statement of basic terms and conditions for the transfer of intellectual property, should promulgate that statement in a common form and format at each university, and make that statement widely available to industry, local leaders and the General Assembly no later than October 1, 2003.

This has not been completed.

(ii) Authorize university boards of visitors to assign title to university-owned inventions.

With respect to the recommendation that university boards of visitors be authorized to assign title to university-owned inventions, the VRTAC report proposed a change in statutory language that would allow such assignments when justified. In addition, they would be examined to ensure that they do not encompass assignments prohibited under the Bayh-Dole Act (those made with federal funds). Boards would be allowed to make such assignments only upon payment, at a minimum, of the amount of the revenue stream that would be anticipated from licensing fees.

Legislation implementing this recommendation was introduced as House Bill 2285 (2003) and amends § 23-9.10:4, as discussed above.

#### E. House Document 37 (November 2003):

House Bill 2639 (2003), patroned by Delegate May, directed VRTAC to develop strategies for the incubation of new science and technology industries in the Commonwealth by November 30, 2003.

VRTAC's subcommittee on the Creation of New High-technology Industries in Virginia identified three critical issues that Virginia must immediately address, in order to become a highly sought after state for investments in high-technology research, development and commercialization:

1. Recognizing and building the existing regions of technological leadership in the Commonwealth, while addressing the imperative need to further spur the development of private equity capital targeted at early-stage technology companies in Virginia.
2. Bridging the physical gap between research universities and technology businesses in Virginia, by which it means that the Commonwealth's research universities are not located near Virginia's technology businesses.
3. Recognizing the importance of the mission of CIT and funding that mission.

One of the subcommittee's seven recommendations was the elimination of barriers between Virginia universities and industry. Specific measures include offering internship incentives, facilitating adjunct faculty appointments, providing funding for "translational" research facilities, and facilitating faculty to take 1-2 year sabbaticals with industry or in national laboratories.



F. Recommendations for a Statewide Comprehensive and Coordinated Strategy for Biotechnology -- The First Steps: Building the Industry Base and Commercializing Current Technologies (November 2002):

The Governor's Advisory Board for the Virginia Biotechnology Initiative was founded by Executive Order Number 14 (2002) by Governor Warner. The Board concluded that Virginia must develop a culture of "harvesting" biotechnology intellectual property generated in Virginia colleges, universities, laboratories and institutions through the elimination of barriers for technology transfer, providing incentives to form Virginia-based companies, and strategic licensing of those technologies that will create new jobs and companies in biotechnology.

Part D of the report noted that while important recommendations had been included in the IP Subcommittee of VRTAC's November 2000 report, "it appears that little progress has been made in implementing these recommendations over the ensuing two years since they were made."

The Board found that it is imperative not only that Virginia has "user friendly" technology transfer policies among its universities and research laboratories, but should also seek to make the ease of dealing with Virginia's universities a competitive advantage for the Commonwealth.

G. Report on policies and strategies to eliminate the barriers between the Commonwealth's institutions of higher education and industry and enhance the development of human capital in the Commonwealth (pending)

House Bill 547 (2004), introduced by Delegate May, requires SCHEV to develop policies and strategies to eliminate the barriers between the Commonwealth's institutions of higher education and industry and enhance the development of human capital in the Commonwealth. These policies and strategies shall include a review of:

- (i) offering incentives for industry to partner with universities in the practical training of undergraduate and graduate students;
- (ii) providing opportunities and incentives for corporate scientists and engineers to have adjunct appointments at universities to train and collaborate with faculty and students;
- (iii) assisting universities in acquiring funding to build or buy facilities where academic labs and corporate entities can work together;
- (iv) providing opportunities and assistance for academic researchers to take one- to two-year sabbaticals in a corporate setting or national lab and bring that experience back to the institution;
- (v) increasing the two-year leave of absence for science and engineering faculty to generate more industrial-sponsored research;
- (vi) allowing industry to fully fund faculty salaries and allow the faculty to work in industry while remaining a university employee, with proper safeguards in place; and
- (vii) allowing faculty to be part-time university employees and part-time industry employees, also with proper safeguards in place.

The report is to be presented to Governor and the General Assembly by November 30, 2004.

H. Report on the Condition of Research at Virginia's Colleges and Universities, SCHEV, May 22, 2002

Findings include:

- Virginia ranked 16th nationally in 2000 based on academic research and development expenditures; this ranking has been fairly consistent over the past 10 years.
- Based on total R&D expenditures at doctoral-granting institutions, Virginia Tech and UVA ranked 51st and 58th.
- Industrial R&D accounts for 55 percent of Virginia's total R&D expenditures, ranking the Commonwealth 16th nationally in 1998.
- Federal government agencies and federally-supported research laboratories account for 30 percent of Virginia's R&D activities.
- R&D expenditures at research universities accounted for approximately 10 percent of total state R&D expenditures in Virginia in 1998.
- Although federal support accounts for the majority of R&D funding at Virginia's institutions, private industry funds 10 percent of academic R&D expenditures. Three Virginia institutions ranked in the top 100 nationally in terms of industrial support for research (UVA - 32nd; VT - 41st; and VCU - 82nd).
- "By law, the Commonwealth requires 30 percent of all indirect cost recoveries by colleges and universities from external research sponsors be reinvested in E&G [or instructional] programs to offset the administrative costs of research programs."

## **10. Policies of Virginia Universities Regarding Ownership of Intellectual Property Developed from Sponsored Research**

### A. College of William and Mary

According to Senate Document 25 (2000), William and Mary is the only Virginia university that has allowed the assignment of IP to third parties. Its intellectual property policy, which at the time was awaiting approval by the Office of the Attorney General, is unlike that of most Virginia universities by providing that, except in specific circumstances, faculty, staff and student inventors retain ownership to the intellectual property they develop while employed at the College, and may patent, copyright or license the technology and retain any royalties.

#### Policy 3.2.2.2: Non-Federally Funded Research

Ownership of intellectual property resulting from research that is funded wholly or in part by an Industrial Partner; Philanthropic or Other Organizations, including Non-Federal Government Agencies; or by an individual will be determined in the Sponsored Research Agreement between the College and the funding source.

### B. Old Dominion University

ODU's IP policy stipulates that inventions made as a result of university or sponsored research or made with significant use of university facilities, funds, or employee time must be assigned to the university, which assigns the IP to the ODU Research Foundation.

ODU's 1999 technology transfer information sheet recites:

The University (or "an entity whose purpose is to benefit the respective institution") must retain title to intellectual properties created by a University employee and resulting from a contract which is supported by the Commonwealth. (citing § 23-4.4). Generally, industry sponsored research at the institution relies on purchased release time, which becomes state general funds. Other laws, state and federal, may apply. See, e.g., I.R.S. Rev. Proc. 97-14.

#### Part IV. Ownership

An invention developed by a university employee shall be the exclusive property of the inventor unless the development or invention is a product of university or sponsored research, or was developed with the significant use of university facilities or funds, or employee time. Rights to inventions which are subject to the terms of the university will be determined by the terms of the agreement.

#### IX. Transfer of Intellectual Property

Except when the governor's prior written approval is required, the university's governing board may transfer ownership of any intellectual property in which it claims an interest.

## C. Virginia Tech

### 2.4 Policy Guidelines

The strong presumption of ownership of research such as products, processes, machines, software, biological technology, etc., is to the university (with the originator having a right to share in the benefits derived therefrom). Thus unless there is convincing and explicit evidence that the IP was developed without the use of university resources and/or facilities (which may include but is not limited to any of the following: use of equipment, lab or office space, university time of originator and/or personnel under his/her control, funds supplied by the university and/or funds originating from sponsored research projects and/or donations to university/affiliated companies, etc.) ownership of the IP rests with the university and the originator(s) are obliged to sign the appropriate legal assignment documents upon request.

**Sponsor Rights:** In the case in which an IP is generated as a result of research funded by a private sector company under a sponsored research project, the IP rights of the sponsor as defined in the applicable clauses of the Sponsored Research Agreement (as approved by the Associate Provost for Research and signed by an authorized officer of the university) shall take precedence over the rights of the university/inventor(s).

## D. Virginia Commonwealth University

### Industry Sponsored research policies:

*Patents and Other Intellectual Property:* The University has an interest in all intellectual property of VCU personnel, including students, created using university time and resources. The University retains all patent rights from sponsored research and any invention or patentable idea conceived or reduced to practice in the course of the research belongs to VCU. The University will grant to the sponsor a time-limited first right to negotiate an exclusive or non-exclusive license based upon the level of sponsor support. The management of VCU intellectual property is the charge of the Office of Technology Transfer.

### IP Policy (May 2003): Ownership of Intellectual Property

Properties of this nature developed by University members using facilities owned or operated by, or resources, beyond their customary or normal usage as defined in Significant Use of University Resources section, administered by the University, become the property of the University.

When intellectual property is created under an internal or external grant, contract, or other agreement approved by the University, the terms of which stipulate ownership of intellectual property, the terms of the agreement will prevail over conflicting terms of this Policy.

Rights of ownership assigned to the University will be directly transferred to the Foundation which shall be responsible for commercialization of University intellectual property.

## E. James Madison University

### 5.1 Patentable Discoveries and Inventions

University Ownership: Patentable materials developed by University employees shall usually be the property of the university. A discovery or invention developed by an employee that is a work made for hire, or that is developed or created using substantial university resources, or that is related to any university research program involving the employee within the past twelve (12) months, is the property of the university. Under this policy, the rights to all patentable discoveries and inventions are retained by the University unless that right is preempted by an external project sponsor. Different sponsors have different policies with respect to inventions resulting from work done under sponsored projects. ***In general, the University is unwilling to give up its patent rights unless the full cost of the research is supported by the sponsor.*** Should royalty income be generated from the application of technology, the university will share in that income according to the formula found in section 6.3.

Sponsored Research and Outside Ownership: Depending on the terms of the grant or contract, *Sponsors of research projects may be entitled to ownership of a discovery or invention made by an employee of the University without payment of any royalty. This ownership may occur when the sponsor provides funds for the entire project and in research involving the testing of a product or products developed by the sponsor.*

Agreements on patent matters may be negotiated where it is necessary to do so as a prerequisite to University participation in the project or receipt of a grant or contract.

### 5.2 Copyrightable Works

Sponsored Research and Outside Ownership - Funds and facilities provided by governmental, commercial, industrial, or other private organizations, *which however are administered and controlled by the University, shall be considered to be funds and facilities provided by or through the University* for the purpose of this policy statement. Agreement between the University and the sponsor pertaining to share of royalties and title to copyrightable materials shall be addressed in the contract between the University and the sponsor. University employees who contract with third parties for the development of copyrightable materials can relinquish no greater interest in the materials than they legally possess. Therefore, if substantial University resources are employed in the development of material subject to copyright, the University retains interests in the materials, regardless of the terms of a contract between the third party and the University employee, unless the University specifically waives its rights.

## F. Christopher Newport University

### b. 1. Outside Ownership (patents)

Certain research projects sponsored by governmental agencies, industrial organizations, or others may entitle the sponsors to ownership of a discovery or invention made by a faculty or staff member of the University without payment of a royalty. *This ownership may occur when the sponsor provides funds for the entire project and in research involving the testing of a product or products developed by the sponsor.*

#### Outside ownership - copyright

3. a. Agreement between the University and sponsor pertaining to sharing royalties and title to copyrightable material shall be addressed in the contract between the University and the sponsor. . . . *If substantial University resources are employed in the development of materials subject to copyright, the University retains interests in the materials, regardless of the terms of the contract between the third party and the University employee, unless the University specifically has waived its rights.*

## G. George Mason University

### Patent policy -- II. Ownership of Patents

#### A. Patents Created by University Faculty

Patents and inventions developed by faculty members shall be the property of such faculty members, except as follows:

##### 1. Sponsored Research

Patents and inventions arising in the course of sponsored research shall belong to the University.

##### 2. Research Financed Wholly or in Part by Federal Government Funds

Patents and inventions which result from research financed wholly or in part by Federal Government funds will be treated in accordance with the provisions of Public Law 96-517, "The Patent and Trademark Amendments of 1980," and will be owned by the University.

##### 3. Research Financed Wholly or in Part by Industrial, Philanthropic or Other Organizations, Including Non-Federal Government Agencies or by Individuals, Under Contracts or Written Agreements with the University

Rights with respect to patents and inventions in this category will be governed by the agreement between the University and funding source.

##### 4. Research in the Course of Assigned Duties or Conducted Wholly or Significantly Through the Use of General Funds

Patents and inventions developed in the course of assigned duties or developed wholly or significantly through the use of general funds shall belong to the University.

Definitions - Significant Use of General Funds, and the phrase "developed wholly or significantly through the use of general funds," mean that general funds *provided over half of the identifiable resources used to develop a particular intellectual property, and exceeded \$10,000.00*. A reasonable cost should be assigned to those resources for which a cost figure is not readily available, such as salary, support staff, and other equipment and resources dedicated to the creator's efforts. Resources such as libraries that are available to employees generally should not be counted in the assessment of the use of general funds.

GMU's Office of Sponsored Research's guidelines for clauses in contracts with potential private sponsors provides, as of July 1999, with respect to ownership of IP:

*Title to all intellectual property developed under a sponsored agreement by employees of the University vests with the University. This position protects the University's tax exempt status and also ensures that after protection, the property will reach the public and will be used for the public good. We will, however, agree to give a corporate sponsor the first option to secure a royalty bearing exclusive license or non-royalty bearing non-exclusive license for a specific period.*

#### H. University of Virginia

Under the University of Virginia patent policy and copyright policy, University employees are obligated to assign ownership to any inventions that are developed (1) within the scope of their employment or (2) using significant University resources (including grant money).

##### 2.4 Inventions and Discoveries Which are not the Result of University Research

The University normally will relinquish any claim to an invention or discovery which is judged by the Vice President for Research and Public Service not to be the product of University research. However, in such cases the researcher may request that the invention or discovery be appraised by and, if appropriate, assigned to the University. In such cases, the terms of the agreement will be determined by the inventor and the University.

## 11. IP Policies of Universities in Other States

### A. In General

Most universities require students and research fellows to assign intellectual property rights to the university if the rights are generated in the performance of the sponsored research. There is more variance, however, among university policies on ownership of intellectual property rights of visiting academic or industry scientists participating in sponsored research.

Most universities own inventions conceived or reduced to practice solely by their employees during the conduct of research. In general, sponsors have accepted this position, subject to other considerations such as the right to use intellectual property.

Companies from some industrial sectors take the position that the sponsor has a right to own the intellectual property since it has paid for the research. Under this scenario, the sponsor owns the intellectual property through contract or assignment by the university or the investigators. This scenario may apply, for example, when the sponsor has made a substantial investment in the development of the technology that is the subject of the university's research, when the sponsor is likely to be the only practical user of the resulting inventions, or if the sponsor has provided proprietary information, technology, or material which is the basis of the research.

In cases when the sponsor acquires ownership of a copyright or invention, **the university retains a royalty-free right to use the intellectual property for any internal research and teaching purposes**, and may retain the right to sublicense to investigators for research and teaching purposes.<sup>3</sup>

Example: University of Maryland System Policy:

Sponsored research agreements shall provide that all intellectual property developed as a result of the sponsored project shall belong to the University. The University may, however, on a case-by-case basis when circumstances warrant, assign ownership of intellectual property that results from sponsored research to the sponsor.

A report by Louis G. Tornatzky in 2000 for the National Governor's Association ([Building State Economies by Promoting University-Industry Technology Transfer](#)) identified several actions that states may take to promote university-industry technology transfer in the interest of building state economies. They include:

- Encouraging university-technology partnerships;
- Investing in entrepreneurial support organizations;
- Enabling private-sector investment in new technologies and technology-based companies (i.e., changing tax laws or increasing the availability of capital);

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<sup>3</sup> Intellectual Property Rights in Industry-Sponsored University Research: A Guide to Alternatives for Research Agreements (1993)



- Removing legal barriers to university-industry technology transfer;
- Championing the role of universities in economic development;
- Attending to human resource and quality-of-life issues; and
- Monitoring federal policies and programs affecting technology transfer.

With respect to the recommendation that states remove legal barriers to university-industry technology transfer, the author states:

To best exploit their technology assets, universities need to be involved in a variety of intellectual property deals; some of these deals will strain the boundaries of what previously has been considered normal practice. For example, professors and/or universities may want or need to take equity positions in new companies. If faculty members are considered state employees and universities are considered state agencies, such relationships may be explicitly or implicitly prohibited by law. It may also improve the general industry partnering culture of the university if faculty can easily consult with companies and engage in industry-sponsored research. Unfortunately, in several states, there is a residue of well-intentioned statute and constitutional law that creates barriers to formal and informal technology transfer. Many of these provisions are an outgrowth of populist traditions and ethics laws intended to prevent private companies from unduly gaining advantages from public expenditures.

Mr. Tornatzky was the lead author of Innovation U: New University Roles in a Knowledge Economy, Southern Growth Policies Board (2002), a series of case studies of 12 universities that were doing a particularly good job of building alliances with industry and playing active roles in the economic development of their regions. The authors contend that institutions of higher education can affect the issues of capital and entrepreneurship by such steps as investing endowments in seed funds attuned to helping regional economies, addressing regional capital gaps, and spinning the research of faculty and students into new firms.

#### B. Other State Laws

1. In 1998, Oklahoma's constitution was amended to remove legal prohibitions against state employees and state institutions participating in start-up companies based on faculty inventions and in using campus facilities to foster these activities. Oklahoma's Technology Transfer Act of 1998 led to the adoption of a statewide technology transfer policy by all state universities.
2. In Mississippi, state conflict of interest laws were construed by the state ethics commission to block state university faculty from having a financial interest in companies commercializing university technology, which precluded their involvement in start-ups. As state agencies, state universities could not hold an equity interest in companies. Under the Mississippi University Research Authority Act, faculty-company relationships may be permitted and universities can hold equity positions in companies commercializing faculty inventions.
3. Texas enacted S.B. 1190 in 2001 to make it easier for Texas A&M and other universities to work with start-ups. The bill removed barriers to working with and transferring IP to small

and start-up companies. Tech transfer centers are authorized to make deals for equity stakes in licensees, manage conflicts of interest, and protect state universities from assuming fiduciary duties as equity shareholders in companies.

4. Maryland (1996):

§ 15-107. Promotion of economic interests through arrangements with private sector.

Public senior higher educational institutions and their governing boards are encouraged to promote the economic development of the State and to increase the financial resources of the institutions through arrangements with the private sector, including collaborative research and development, commercial application of institution-owned intellectual property, and the provisions of technical assistance.

5. Ohio's S.B. 286 in 2000 intended to ensure opportunities for employees of Ohio's institutions of higher education to share in the financial rewards of their research, including both the receipt of royalties and the taking of equity positions in firms to which Ohio's institutions license their intellectual properties. The bill:

- (1) expanded and clarified the scope of the institutions' rights and interests in discoveries, inventions and patents, yet protect the discoveries and inventions made by employees on their own time and with their own resources;
- (2) allowed the institution to transfer such interests to employees in the current way—by license, or in a new way—by allowing an employee to take a financial interest in a licensee firm;
- (3) allowed an institution to develop rules that permits an employee researcher to participate in the royalties from, or to take an equity position in, a licensee firm;
- (4) required certain mandatory rules in such cases;
- (5) retained the Ohio Ethics Commission's authority to ensure the implementation of the mandatory rules; and (6) required a committee to develop a model set of rules.