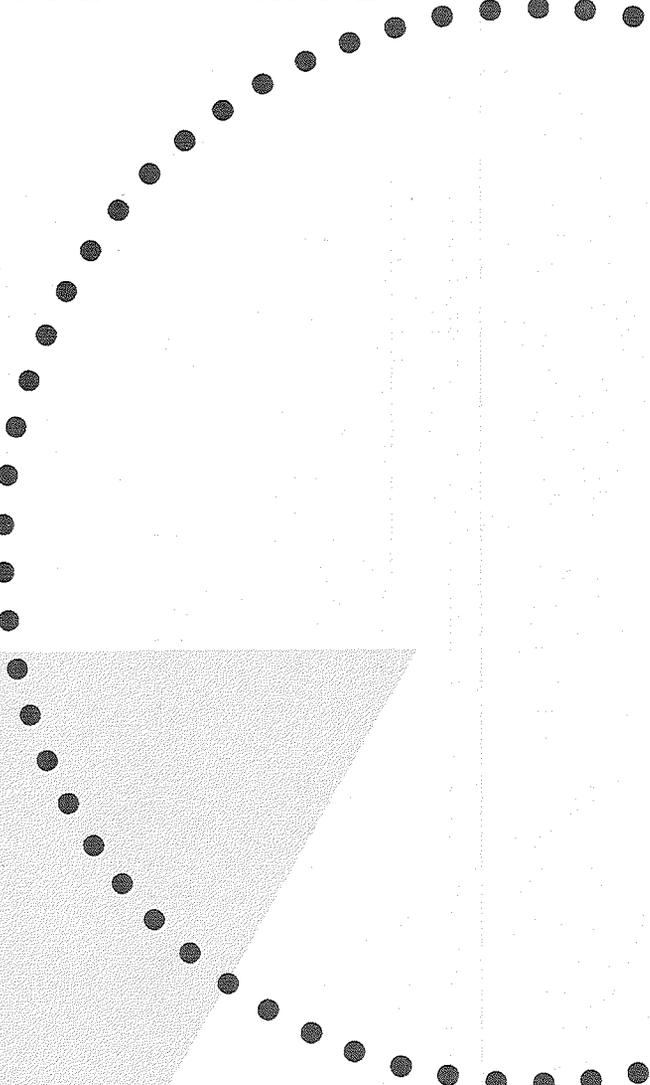
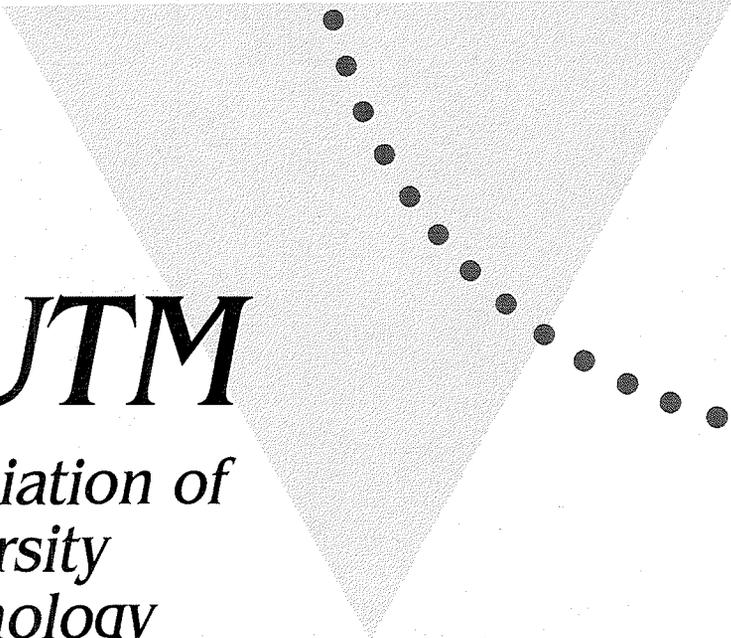


*AUTM Licensing Survey
FY 1994 Survey Summary
and
Selected Data FY 1991 - FY 1994*



AUTM

*Association of
University
Technology
Managers, Inc.*

A MESSAGE FROM THE AUTM PRESIDENT

Dear AUTM Members and Interested Friends:

The FY 1994 AUTM Licensing Survey summary report contains information for fiscal years 1991 through 1994 for U.S. and Canadian academic institutions. The data compiled in this report attest to the strength and importance of the academic technology transfer effort. The continued growth in the numbers of inventions reported, patent applications filed, patents received, licenses and options executed, and royalty income generated documents the contributions made by the academic community to the commercialization of technology for the public good.

These achievements speak to the wisdom of the United States Congress in passing the Bayh-Dole Act in 1980. This Act encourages institutions carrying out federally funded research to take an active role in patenting and licensing inventions; that is certainly occurring. As a result, more inventions are being licensed, including those resulting from federally funded research. The data also show a strong level of activity at Canadian academic institutions, which are making significant contributions within Canada, the United States, and abroad.

This growth in academic technology transfer is having a positive impact. Companies are investing in developing, manufacturing, and marketing products based on the technologies licensed by academic institutions. This investment yields jobs and economic growth, and the resulting products benefit the public. Royalties generated provide incentives to inventors, contribute to reimbursing the institutions for the costs of patenting and licensing technology, and are reinvested in research and teaching, thus ensuring future advances in science, technology, and medicine.

The survey data that AUTM has compiled since 1991 provide a statistical base that is beginning to be used to estimate the economic impact of technology transfer. For example, Dr. Ashley Stevens, Director of the Office of Technology Transfer at Boston University, used the AUTM survey data from FY 1993, an estimated royalty rate of 2%, and a U.S. Census figure of \$125,000 in sales per job, to project that academic technology transfer resulted in \$17 billion in products sold and supported 137,000 jobs during that fiscal year.

An article just published in Volume VII (1995) of the *AUTM Journal* by Dr. Lori Pressman and other members of the Technology Licensing Office of MIT reported on a study of the pre-production investment made by MIT's active exclusive patent licensees. Based on the results of that study, the authors projected that, even before any products are sold, the licenses granted by universities, hospitals, and research institutes result in the investment of \$2 to \$5 billion per year by licensees, supporting between 20,000 and 40,000 jobs annually.

Adding the estimates provided by Dr. Stevens on product sales to the pre-production investment figures derived by MIT, the economic impact of licensing by the academic community can be estimated at \$20 billion per year, supporting approximately 150,000 jobs annually.

This year's survey also shows that since 1980, over 1,100 new companies were formed based on licenses granted by the academic community. Over 200 of these new companies resulted from licenses granted in FY 1994.



AUTM Licensing Survey

*FY 1994 Survey Summary
and
Selected Data FY 1991 - FY 1994*

***AUTM**
Association of
University
Technology
Managers, Inc.*

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FOREWORD

On behalf of the AUTM Survey, Statistics, and Metrics Committee members, it is with great pleasure that I submit to you the results of the AUTM Licensing Survey for Fiscal Years 1991 through 1994. This survey was commissioned by the Association of University Technology Managers ("AUTM") with approval from the 1995 AUTM Board of Trustees, and was carried out by the AUTM Statistics Committee with assistance from Joyce Brinton (AUTM President), Katherine L. Chapman (AUTM Vice President for Planning), and Jean A. Mahoney (AUTM Vice President for Communications).

Appreciation is extended to the many AUTM members who participated in this survey over the past several years, and to the new institutions that joined in the AUTM Licensing Survey for the first time this year. Your timely and complete responses are to be commended.

The *FY 1994 Survey Summary and Selected Data FY 1991 - FY 1994* report provides an overview of the larger, more detailed report (referred to hereafter as the *Full Report*), and includes aggregate totals and selected data from the *Full Report*. The data summarized in the *Full Report* includes the previously reported figures for Fiscal Years 1991 through 1993, and presents new data accrued for Fiscal Year 1994.

For information on the price and availability of the *Full Report*, contact Ms. Penny Dalziel, AUTM, 49 East Avenue, Norwalk, CT 06851, (203) 845-9015, or Fax: (203) 847-1304. Questions regarding the material presented in this report should be directed to my attention at the University of California, Office of Technology Transfer, 1320 Harbor Bay Parkway, Suite 150, Alameda, CA 94502, (510) 748-6628, Fax: (510) 748-6696, or through the internet at suzanne.quick@ucop.edu.

Suzanne Quick, Chair
AUTM Survey, Statistics,
and Metrics Committee

FY 1994 Survey Summary

INTRODUCTION AND OVERVIEW

Background and Survey Description

The AUTM Licensing Survey is carried out each year by the Association of University Technology Managers, Inc., (AUTM), to provide objective information related to the field of academic technology transfer. The survey gathers data on the technology transfer programs of both U.S. and Canadian institutions. The first AUTM Licensing Survey was conducted in 1993 and focused on Fiscal Years (FY) 1991 and 1992. Since then, the survey has been administered on an annual basis.

The survey itself ¹ covers a wide range of topics. It asks for information on technology transfer activity in such areas as invention disclosures, patenting and licensing, and requests financial information such as royalties received, payments made to other institutions, and legal fees and reimbursements. It also asks for certain organizational information, such as staffing levels and numbers of staff carrying out various kinds of work.

Regarding the design of the survey, each question is carefully worded and precise definitions are provided to assure that comparable data are collected from institution to institution. In addition, every effort is made to collect comparable information each year to enable a meaningful analysis of trends within the data collection interval. A few of the questions and definitions on the survey have been fine tuned over time (see Notes, pp. 9-10, and additional annotations throughout the report).² One or two new questions also have been asked every year that had not been asked previously.³ Of special note for the FY 1994 survey (conducted in 1995) was the addition of a question pertaining to the amount of research funding committed to an institution that was "linked" to license or option agreements.

The Survey Reports

The findings of the FY 1994 AUTM Licensing Survey are reported in two documents. The first is entitled "*AUTM Licensing Survey: FY 1994 Survey Summary and Selected Data FY 1991 - FY 1994*" and is referred to as the "*FY 1994 Survey Summary*." It provides FY 1994 results for all respondents divided into the following institutional categories: U.S. Universities, U.S. Hospitals and Research Institutes, Canadian Institutions, and Third-Party Patent Management Firms (see Attachments D and E, pp. 19-27). It also highlights noteworthy developments in FY 1994 and brings together summary information on all institutions that have ever responded to the AUTM Licensing Survey (see Attachment F, pp. 28-32) as well as the subset of these institutions that provided information for FY 1991-1994, the four years for which AUTM survey data have been collected (see Attachment G, pp. 33-36). This latter group is referred to as the "four-year recurrent respondents."⁴

THE FY 1994 AUTM LICENSING SURVEY

Data Collection

The FY 1994 AUTM Licensing Survey is included as Attachment A, pp. 11-14. The survey population for Fiscal Year 1994 consisted of 255 institutions, including: 187 U.S. Universities, 42 U.S. Hospitals and Research Institutes, 21 Canadian Institutions, and 5 Third-Party Patent Management Firms.⁷

The institutions surveyed were asked to provide a best estimate to each question if an exact response was not known. In a few instances, best estimates were provided, and, at times, responses were rounded to the nearest thousands or millions. Not available data are noted as "N.A."

Respondents

Follow-up efforts were heavily concentrated toward the top 100 universities (Source: NSF Table B-4, Federal Obligations for Science and Engineering Research and Development to the 100 Universities and Colleges Receiving the Largest Amounts...), resulting in an 84% response rate from these top institutions. Overall, 62% of those contacted responded, representing 159 organizations for Fiscal Year 1994, including: 120 U.S. Universities, 24 U.S. Hospitals and Research Institutes, 12 Canadian Institutions, and 3 Third-Party Patent Management Firms

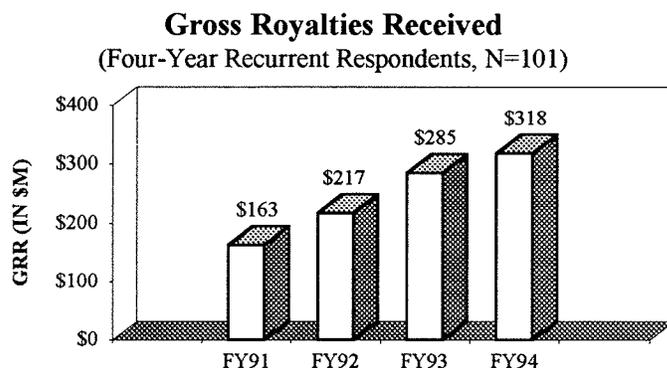
A summary of the number of responses by sample population for Fiscal Years 1991 - 1994 is shown in Figure 1. The *Full Report* presents the data reported by every participating institution in each year surveyed, providing information on 183 organizations. However, as noted throughout the reports, some of the reported comparisons are based on data provided by the four-year recurrent respondents, who consistently participated over all four years surveyed. The four-year recurrent respondents include approximately 66% of the top 100 U.S. Universities and 81% of the top 50 U.S. Universities.⁸

Figure 1:

| | Total Surveyed | RESPONSES | | | | |
|--------------------------------------|----------------|-------------|-----------------------------|-----------------|----------------------|-------|
| | | U.S. Univs. | U.S. Hosps. and Res. Insts. | Canadian Insts. | Patent Mngmnt. Firms | Total |
| FY 1991 & FY 1992 | 260 | 98 | 20 | 10 | 2 | 130 |
| FY 1993 | 250 | 117 | 26 | 12 | 3 | 158 |
| FY 1994 | 255 | 120 | 24 | 12 | 3 | 159 |
| Participated every year ⁹ | | 80 | 16 | 8 | 2 | 106 |
| Participated in at least one year | | 137 | 29 | 14 | 3 | 183 |

Figure 4 reflects the growth in royalty income from FY 1991 - FY 1994 for the 101 institutions that provided royalty information for all four years of the survey. Royalty income for this group rose from \$163 million in FY 1991 to \$318 million in FY 1994, representing a 95% increase over the four years studied.

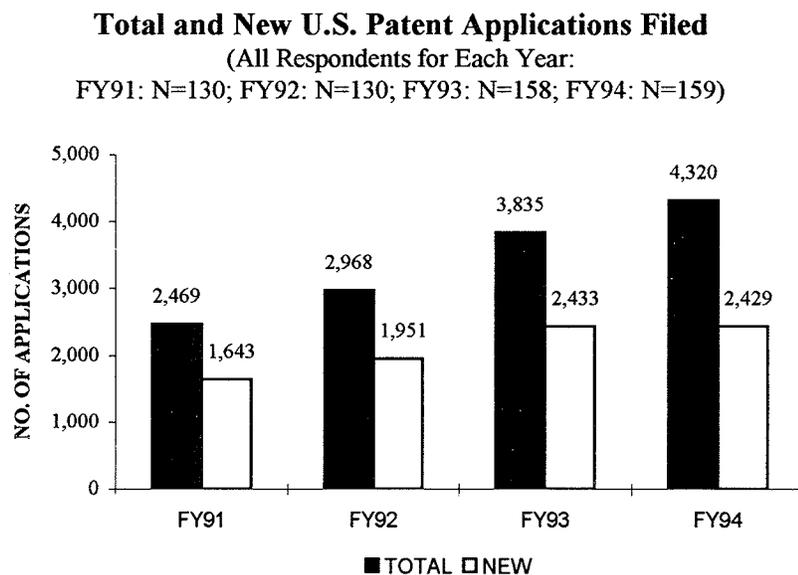
Figure 4:



Patenting

Respondents reported that they were issued 1,874 U.S. patents in FY 1994, an increase of 17% over the prior year.¹¹ Patent application activity also rose. Cumulatively, a total of 13,592 U.S. patent applications were filed by AUTM Licensing Survey respondents from FY 1991 through FY 1994. Sixty-two percent (62%) of these, or 8,456, were new applications.¹² Figures 5A and 5B depict the movement in patent and new patent application activity among the total group of respondents and the subset of four-year recurrent respondents, respectively.

Figure 5A:

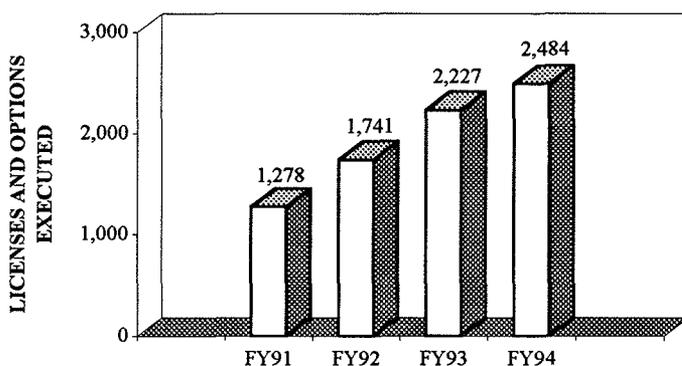


Licensing

FY 1994 also saw a continuation in the growth of licensing activity. Respondents executed 2,484 licenses and options in FY 1994, yielding a cumulative total of 7,730 licenses and options executed since FY 1991.

Figure 7:

Licenses and Options Executed
 (All Respondents for Each Year:
 FY91: N=130; FY92: N=130; FY93: N=158; FY94: N=159)



The pattern of growth in licensing activity among the 98 institutions that have consistently provided AUTM with their level of activity in this area is seen in Figure 8, which indicates a 63% increase in activity since FY 1991.

Figure 8:

Licenses and Options Executed
 (Four-Year Recurrent Respondents, N=98)

| | FY 1991 | FY 1992 | FY 1993 | FY 1994 |
|-----------------------------------|---------|---------|---------|---------|
| Licenses/Options Executed | 1,160 | 1,539 | 1,652 | 1,892 |
| % Increase Over Prior Year | | 33% | 7% | 15% |
| % Increase FY 91 - FY 94 | | | | 63% |

NOTES

- ¹ See Attachment A for the AUTM Licensing Survey and its Definitions and Instructions page.
- ² The definitions for Total Sponsored Research Expenditures, Research Expenditures: Federal Government Sources, and Research Expenditures: Industrial Sources were modified beginning with FY 1993 to request annual expenditure amounts as opposed to annual sponsored funding levels. In addition, industrial support provided for clinical trial studies could not be excluded from industrial support expenditures due to the institutions' tracking systems. Therefore, in FY 1993 and thereafter, this exclusion was dropped from the survey. To help managers identify if clinical trial studies might be included in the reported figure for research expenditures from industrial sources, a new question was added to the survey in FY 1993 to determine if the participating institution includes a Medical School.
- ³ Royalties Paid to Other Institutions and the number of U.S. Patents Issued are examples of questions that were added to the survey after the survey's implementation the first year. These data have only been accrued for FY 1993 and FY 1994.
- ⁴ Four-year recurrent respondents are those institutions, excluding third-party patent management firms (PMFs), that have participated in all four years of the AUTM Licensing Survey. Because the four-year recurrent respondents sample is used to identify trends, patent management firms were excluded from this category to avoid double-counting in the data. Attachment G includes summary totals for selected data elements for the four-year recurrent respondents by sample population, excluding PMFs. (The criteria for Attachment G differs from Attachment F, which includes all responses provided for all participating institutions, even if those institutions responded to the survey in only one year.) The total number of maximum four-year recurrent respondents is 104: 106 minus 2 PMFs (see Figure 1). When four-year recurrent respondents are studied, "N=x," where "x" represents the sample size, will never be greater than 104, but could be less depending on the number of four-year recurrent respondents that provided a response to the data element being analyzed, ("N.A." responses are also excluded from the four-year recurrent respondents).
- ⁵ The comparable tables included in the Full Report list the four-year recurrent respondents and their respective values reported from year to year for each of the selected data elements shown in Attachment G.
- ⁶ Tables showing data for FY 1991 - FY 1994 reflect all organizations that participated in the AUTM Licensing Survey for any of these years. Tables presenting data for only one year or a few years reflect only those institutions that participated in the survey for the year(s) shown.
- ⁷ Institutions surveyed include universities and colleges, teaching hospitals, not-for-profit research firms, and third-party patent management firms that manage intellectual property for these institutions.
- ⁸ Follow-up efforts were heavily concentrated toward the top 50 universities for FY 1991 and FY 1992. Beginning with FY 1993, these efforts were expanded to include the top 100 universities. There is greater representation in the four-year recurrent respondents sample, therefore, of the universities that fall within the top 50 than of those that are among the top 100.
- ⁹ Represents the maximum number for four-year recurrent respondents: 106 minus PMFs, or 104.
- ¹⁰ Gross royalties received include: license issue fees, payments under options, annual minimums, running royalties, termination payments, the amount of equity received when cashed-in, and software end user license fees equal to \$1,000 or more, but *not* research funding, patent reimbursement fees, a valuation of equity not cashed-in, software end user license fees less than \$1,000, or trademark licensing royalties from university insignia. Adjusted gross royalties are derived by deducting the amount of Royalties Paid to Other Institutions from gross royalties received. It is noteworthy that there has been a change in the manner in which these data were derived. In FY

Instructions and Definitions

Attachment A

Instructions:

Please answer each question carefully. Every question has been worded to attempt to reduce ambiguities. If you are not able to provide an exact response to a question, we would like you to provide your *best estimate* to the question, as opposed to providing no answer at all. Recognizing that misinterpretations may still occur, you are encouraged to contact Ms. Diane Hoffman at (609) 799-6187 if clarification is required. The survey requests data for a complete year regardless of your reporting year, i.e., Fiscal 1994 may be 10/93-9/94 or 7/93-6/94 or 1/1/94-12/31/94.

Definitions:

- Research Funding Research Funding includes the total amount of research support committed to your institution (even if the funds are to be spent over several years) as components of license or option agreements that were fully executed in the survey period.
- Start-up Company As used in this survey, a company that was dependent upon licensing the institution's technology for initiation.
- Eligible FTEs Persons employed in the office of technology transfer and, in rare instances, those whose duties are *specifically assigned* to supporting technology transfer activities, i.e., an industrial liaison, intellectual property counsel, but not persons employed in an office of sponsored programs.
- Technology Transfer Technology Transfer includes those activities associated with both technology licensing (see definition below) and industry research agreements.
- Technology Licensing Technology Licensing includes activities associated with the evaluation and marketing of technology (including trademarks but not university's insignia) and intellectual property management, and those of license administration. It does not include activities associated with industry research agreements.
- Industry Expenditures Industry Expenditures include expenditures made by the institution in support of its research activities funded by *corporations*, but not expenditures supported by other sources such as foundations and other nonprofit organizations.
- Foreign Foreign includes: foreign governments and individuals; nonprofit organizations or companies headquartered in a foreign country; U.S. subsidiaries of foreign corporations; and, joint venture companies located in the U.S. in which a foreign partner has controlling interest.
- Royalties Royalties include: license issue fees, payments under options, annual minimums, running royalties, termination payments, the amount of equity received when cashed-in, and software end user license fees equal to \$1,000 or more, but not research funding, patent reimbursement fees, a valuation of equity not cashed-in, software end user license fees < \$1,000, or trademark licensing royalties from university insignia.
- Royalties Paid to Other Institutions Royalties Paid to Other Institutions is a subset of gross royalties received and should not be subtracted from the total. This number will be used to better define the double-count of royalties received reported under this survey.

TABLE OF CONTENTS
(FULL REPORT)*

| | |
|---|------------|
| FOREWORD | i |
| LIST OF TABLES | iv |
| LIST OF TABLES FOR FOUR-YEAR RECURRENT RESPONDENTS | vi |
| FY 1994 SURVEY SUMMARY | 1 |
| U.S. UNIVERSITIES | 37 |
| Tables 1 - 19 for U.S. Universities, pp. 38 - 132 | |
| U.S. HOSPITALS & RESEARCH INSTITUTES | 133 |
| Tables 1 - 19 for U.S. Hospitals & Research Institutes, pp. 134 - 154 | |
| CANADIAN INSTITUTIONS | 155 |
| Tables 1 - 19 for Canadian Institutions, pp. 156 - 186 | |
| THIRD-PARTY PATENT MANAGEMENT FIRMS | 187 |
| Tables 1 - 19 for Third-Party Patent Management Firms, pp. 188 - 208 | |
| AGGREGATE TOTALS FOR ALL RESPONDENTS | 209 |
| Tables 1 - 19 for All Respondents, pp. 210 - 230 | |
| TABLES FOR FOUR-YEAR RECURRENT RESPONDENTS | 231 |
| Tables 20 - 30 for Four-Year Recurrent Respondents, pp. 232 - 308 | |
| SUGGESTED CITATION AND AVAILABILITY OF PUBLICATION | 309 |

** As stated in the Foreword, the Full Report is available separately.*

LIST OF TABLES, CONTINUED
(FULL REPORT)*

| | |
|-----------------|--|
| Table 13 | Legal Fees Expended for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 14 | Legal Fees Reimbursed for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 15 | Invention Disclosures Received for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 16 | Total U.S. Patent Applications Filed for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 17 | New U.S. Patent Applications Filed for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 18 | U.S. Patents Issued for Fiscal Year (FY) 1994 and FY 1993 |
| Table 19 | Start-up Companies Formed for Fiscal Year (FY) 1994 and Prior Years, and Total Licenses with Equity, All Years |

LIST OF TABLES FOR FOUR-YEAR RECURRENT RESPONDENTS
FOLLOWS ON THE NEXT PAGE...

ALL RESPONDENTS:

Attachment D

| | U.S. UNIVERSITIES | U.S. HOSPITALS & RESEARCH INSTITUTES | CANADIAN INSTITUTIONS (U.S. \$) | PATENT MANAGEMENT FIRMS | TOTAL |
|---|-------------------|--|---|-------------------------------|------------------|
| Professional FTEs: | | | | | |
| Technology Transfer | 356.85 | 53.78 | 50.20 | 19.00 | 479.83 |
| Licensing Activities | 238.82 | 31.23 | 39.20 | 29.00 | 338.25 |
| Staff Support FTEs: | | | | | |
| Technology Transfer | 271.10 | 31.18 | 27.60 | 8.00 | 337.88 |
| Licensing Activities | 169.31 | 20.10 | 17.40 | 22.50 | 229.31 |
| Research Expenditures: Industrial Sources | \$1,362,913,750 | \$233,764,356 | \$64,273,110 | \$5,428,773 | \$1,666,379,989 |
| Research Expenditures: Federal Govt. Sources | \$10,602,876,734 | \$908,117,563 | \$310,482,872 | \$0 | \$11,821,477,169 |
| Total Sponsored Research Expenditures | \$16,058,644,323 | \$1,465,486,884 | \$684,158,438 | \$5,428,773 | \$18,213,718,418 |
| Licenses/Options Executed | 2,049 | 211 | 141 | 83 | 2,484 |
| Start-up Companies Formed | 175 | 22 | 29 | 15 | 241 |
| Gross Royalties Received | \$265,932,578 | \$84,002,583 | \$5,770,558 | \$66,104,159 | \$421,809,878 |
| Royalties Paid to Other Institutions | \$20,774,204 | \$620,224 | \$243,174 | \$39,938,894 | \$61,576,496 |
| Legal Fees Expended | \$53,345,200 | \$12,962,180 | \$2,327,310 | \$584,306 | \$69,218,996 |
| Legal Fees Reimbursed | \$25,600,573 | \$6,555,736 | \$903,228 | \$177,896 | \$33,237,433 |
| Licenses/Options Generating Royalties | 3,560 | 491 | 242 | 241 | 4,534 |
| Invention Disclosures Received | 6,697 | 749 | 445 | 852 | 8,743 |
| Total U.S. Patent Applications Filed | 3,477 | 575 | 157 | 111 | 4,320 |
| New U.S. Patent Applications Filed | 2,015 | 287 | 98 | 29 | 2,429 |

TABLE 1

Attachment E

(Ranked by FY 1994 Royalties Received)

| U.S. UNIVERSITIES: | FY 1994 Royalties Received | FY 1994 Licenses Generating Royalties | FY 1994 Professional FTEs for Licensing | FY 1994 Legal Fees Expended | FY 1994 Legal Fees Reimbursed | FY 1994 Invention Disclosures Received | FY 1994 U.S. Patent Applications Filed | FY 1994 U.S. Patents Issued | FY 1994 Licenses & Options Executed | Total Active Licenses & Options |
|---|----------------------------------|--|--|-----------------------------------|-------------------------------------|---|---|-----------------------------------|--|---------------------------------------|
| Texas A&M University System | \$1,501,871 | 57 | 3.00 | \$454,404 | \$74,067 | 72 | 38 | 24 | 33 | 132 |
| Emory University | \$1,500,000 | 9 | 0.90 | \$448,700 | \$182,100 | 35 | 22 | 7 | 6 | 38 |
| Univ. of Illinois, Urbana, Champaign | \$1,438,338 | 97 | 1.50 | \$91,540 | \$2,663 | 48 | 29 | 18 | 60 | 131 |
| Univ. of Colorado | \$1,289,257 | 30 | 2.00 | \$318,000 | \$20,000 | 91 | 44 | 13 | 17 | 60 |
| Univ. of Minnesota | \$1,278,757 | 66 | 2.00 | \$1,056,550 | \$861,720 | 136 | 63 | 34 | 36 | 242 |
| Univ. of Pennsylvania | \$1,200,000 | 44 | 5.00 | \$1,400,000 | \$387,160 | 113 | 107 | 45 | 42 | 65 |
| Univ. of Kentucky Research Fndtn | \$1,153,144 | 10 | 1.00 | \$200,000 | \$0 | 44 | 27 | 4 | 18 | 40 |
| Ohio State University | \$1,121,890 | 30 | 1.50 | \$362,028 | \$125,065 | 79 | 28 | 9 | 21 | 54 |
| Purdue Research Foundation | \$1,050,000 | 87 | 2.00 | \$445,329 | \$306,291 | 116 | 30 | 11 | 43 | 128 |
| Brigham Young University | \$1,038,977 | 40 | 2.00 | \$99,806 | \$84,224 | 24 | 5 | 10 | 12 | 58 |
| Univ. of Tennessee Research Corp. | \$988,018 | 23 | 1.30 | \$342,265 | \$263,930 | 59 | 25 | 6 | 8 | 30 |
| Univ. of North Carolina/ Chapel Hill | \$886,384 | 33 | 2.05 | \$214,931 | \$174,557 | 75 | 46 | 12 | 15 | 90 |
| Arizona State University | \$874,884 | 6 | 1.00 | \$456,265 | \$0 | 26 | 8 | 5 | 5 | 10 |
| Univ. of Illinois at Chicago | \$872,800 | 21 | 3.00 | \$139,400 | \$130,200 | 34 | 5 | 1 | 6 | 30 |
| SUNY Research Foundation | \$831,780 | 53 | 8.25 | \$1,116,366 | \$192,645 | 153 | 61 | 38 | 40 | 132 |
| Univ. of Alabama/Birmingham | \$802,970 | 48 | 3.00 | \$203,637 | \$113,795 | 73 | 50 | 7 | 26 | 130 |
| Northwestern University | \$799,363 | 20 | 1.00 | \$307,900 | \$193,663 | 45 | 23 | 14 | 12 | 50 |
| Univ. of Maryland, College Park | \$671,749 | 65 | 4.00 | \$239,819 | \$93,949 | 73 | 27 | 17 | 41 | 118 |
| Indiana University | \$667,000 | 29 | 2.80 | \$336,000 | \$217,000 | 64 | N.A. | 4 | 20 | 94 |
| Case Western Reserve University | \$656,530 | 15 | 2.00 | \$109,000 | \$37,000 | 25 | 15 | 3 | 25 | 80 |
| Univ. of Iowa Research Fndtn | \$630,298 | 37 | 1.30 | \$407,978 | \$177,628 | 69 | 22 | 11 | 23 | 65 |
| Virginia Tech Intellectual Properties, Inc. | \$626,838 | 31 | 0.75 | \$55,139 | \$0 | 80 | 30 | 20 | 17 | 69 |
| Wayne State University | \$618,000 | 5 | 1.20 | \$312,260 | \$322,460 | 29 | 12 | 15 | 10 | 40 |
| Vanderbilt University | \$605,353 | 12 | 0.50 | \$263,311 | \$111,804 | 60 | 11 | 9 | 11 | 46 |
| Thomas Jefferson University | \$597,000 | 25 | 3.00 | \$561,000 | \$164,000 | 54 | 58 | 15 | 18 | 47 |
| Univ. of Chicago-ARCH Dev. Corp. | \$554,028 | 22 | 2.00 | \$375,886 | \$751,986 | 59 | 38 | 9 | 12 | 79 |
| Oregon State University | \$518,428 | 26 | 0.80 | \$136,190 | \$43,374 | 19 | 14 | 14 | 5 | 37 |
| Univ. of Connecticut | \$514,000 | 6 | 1.00 | \$260,000 | \$85,000 | 35 | 18 | 6 | 6 | 22 |
| Univ. of Dayton | \$504,246 | 10 | 1.00 | \$105,129 | \$16,454 | 35 | 4 | 9 | 7 | 66 |
| Univ. of Southern California | \$495,260 | 28 | 2.00 | \$336,077 | \$65,048 | 68 | 41 | 16 | 19 | 30 |
| Temple University | \$493,710 | 18 | 3.00 | \$350,360 | \$203,850 | 23 | 12 | 10 | 5 | 26 |

TABLE 1

Attachment E

(Ranked by FY 1994 Royalties Received)

| U.S. UNIVERSITIES: | | | | | | | | | | |
|---------------------------------------|----------------------------------|--|--|-----------------------------------|-------------------------------------|---|---|-----------------------------------|--|---------------------------------------|
| Name of Institution | FY 1994 Royalties Received | FY 1994 Licenses Generating Royalties | FY 1994 Professional FTEs for Licensing | FY 1994 Legal Fees Expended | FY 1994 Legal Fees Reimbursed | FY 1994 Invention Disclosures Received | FY 1994 U.S. Patent Applications Filed | FY 1994 U.S. Patents Issued | FY 1994 Licenses & Options Executed | Total Active Licenses & Options |
| Montana State University | \$65,117 | 19 | 1.00 | \$25,000 | \$20,000 | 10 | 6 | 3 | 7 | 19 |
| Univ. of Oregon | \$65,000 | 7 | 0.30 | \$42,800 | \$0 | 19 | 11 | 6 | 5 | N.A. |
| Univ. of Massachusetts/Amherst | \$62,525 | 8 | 0.50 | \$2,858 | \$0 | 10 | 7 | 2 | 24 | 38 |
| Drexel University | \$62,000 | 6 | 0.50 | \$92,506 | \$54,369 | 9 | 3 | 2 | 4 | 10 |
| Univ. of Denver | \$61,000 | 1 | 0.10 | \$31,567 | \$0 | 7 | 3 | 1 | 0 | 1 |
| Medical College of Ohio | \$56,735 | 4 | 0.25 | \$67,300 | \$15,332 | 6 | 9 | 0 | 3 | 13 |
| Rice University | \$55,000 | 1 | 0.10 | \$85,000 | \$0 | 2 | 10 | 10 | 4 | 4 |
| Northeastern University | \$52,500 | 4 | 0.25 | \$250,000 | \$11,603 | 36 | 24 | 21 | 1 | 7 |
| Florida Atlantic University | \$50,000 | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| New York Medical College | \$31,263 | 2 | 0.50 | \$34,860 | \$30,805 | 5 | 2 | 1 | 1 | 8 |
| Univ. of South Alabama | \$25,000 | 1 | 0.50 | \$32,000 | \$0 | 3 | 1 | 1 | 1 | 3 |
| Univ. of Oklahoma Health Science Ctr. | \$19,000 | 2 | 0.25 | \$138,160 | \$93,057 | 12 | 10 | 4 | 1 | 12 |
| Univ. of North Carolina/Charlotte | \$14,326 | 7 | 0.30 | \$130,022 | \$10,576 | 12 | 5 | 2 | 7 | 8 |
| Ohio University | \$12,000 | 1 | 0.25 | \$75,000 | \$5,500 | 18 | 9 | 4 | 4 | 17 |
| New Mexico State University | \$11,470 | 3 | 0.25 | \$64,012 | \$10,844 | 32 | 6 | 3 | 6 | 18 |
| Northern Illinois University | \$10,000 | 1 | 0.50 | \$35,000 | \$11,000 | 8 | 4 | 2 | 1 | 8 |
| Univ. of Nebraska Medical Center | \$10,000 | 3 | 1.50 | \$225,000 | \$25,000 | 35 | 19 | 12 | 4 | 27 |
| Univ. of South Carolina | \$7,300 | 2 | 0.00 | \$48,767 | \$0 | 10 | 2 | 5 | 0 | 7 |
| Univ. of New Orleans | \$4,000 | 2 | 0.05 | \$0 | \$0 | 5 | 0 | 1 | 1 | 3 |
| Univ. of Alabama in Huntsville | \$2,434 | 3 | 0.10 | \$25,077 | \$0 | 7 | 0 | 5 | 0 | 8 |
| California State Univ./Fullerton | \$500 | 1 | 0.02 | \$1,000 | \$0 | 2 | 0 | 0 | 0 | 1 |
| Illinois State University | \$0 | 0 | 0.25 | \$0 | \$0 | 5 | 0 | 0 | 0 | 2 |
| Marshall University Research Corp. | \$0 | 0 | 0.10 | \$0 | \$0 | 1 | 0 | 0 | 0 | 0 |
| New Jersey Institute of Technology | \$0 | 1 | 1.25 | \$95,000 | \$0 | 26 | 6 | 3 | 1 | 2 |
| San Diego State University | \$0 | 0 | 0.50 | \$5,990 | \$0 | 2 | 4 | 0 | 0 | 0 |
| Univ. of North Texas | \$0 | 0 | 0.05 | N.A. | N.A. | 5 | 0 | 0 | 0 | 1 |
| Univ. of Tulsa | \$0 | 0 | 0.40 | \$0 | \$0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL U.S. UNIVERSITIES | \$265,932,578 | 3,560 | 238.82 | \$53,345,200 | \$25,600,573 | 6,697 | 3,477 | 1,596 | 2,049 | 8,276 |

TABLE 1

Attachment E

(Ranked by FY 1994 Royalties Received)

CANADIAN INSTITUTIONS:

| Name of Institution | FY 1994 Royalties Received (U.S. \$) | FY 1994 Licenses Generating Royalties | FY 1994 Professional FTEs for Licensing | FY 1994 Legal Fees Expended (U.S. \$) | FY 1994 Legal Fees Reimbursed (U.S. \$) | FY 1994 Invention Disclosures Received | FY 1994 U.S. Patent Applications Filed | FY 1994 U.S. Patents Issued | FY 1994 Licenses & Options Executed | Total Active Licenses & Options |
|------------------------------------|---|--|--|--|--|---|---|-----------------------------------|--|---------------------------------------|
| Univ. of Waterloo | \$1,400,000 | 34 | 1.50 | \$140,567 | \$24,160 | N.A. | 18 | 3 | 16 | 74 |
| UTI Inc./University of Calgary | \$1,235,963 | 51 | 4.50 | \$476,674 | \$247,583 | 42 | 14 | 2 | 38 | 143 |
| Univ. of British Columbia | \$878,542 | 37 | 10.00 | \$571,160 | \$163,598 | 108 | 45 | 18 | 21 | 105 |
| Univ. of Toronto | \$821,436 | 26 | 3.00 | \$232,081 | \$141,298 | 95 | 15 | 6 | 8 | 25 |
| Univ. of Alberta | \$579,714 | 27 | 5.20 | \$250,824 | \$153,659 | 75 | 21 | 6 | 16 | 46 |
| Queen's University | \$441,277 | 19 | 3.00 | \$130,028 | \$21,075 | 38 | 15 | 9 | 10 | 30 |
| Mount Sinai Hospital | \$188,545 | 18 | 1.00 | \$156,175 | \$76,935 | 8 | 8 | 3 | 8 | 18 |
| Univ. of Manitoba | \$169,926 | 13 | 1.00 | \$239,784 | \$32,844 | 12 | 7 | 3 | 12 | 46 |
| Simon Fraser University | \$26,317 | 5 | 3.00 | \$33,024 | \$1,388 | 47 | 4 | 0 | 4 | 11 |
| Carleton University | \$12,775 | 6 | 1.00 | \$7,572 | \$0 | 8 | 0 | 0 | 5 | 19 |
| Biotechnology Research Institute | \$8,742 | 4 | 4.00 | \$74,779 | \$40,688 | N.A. | 6 | 0 | 3 | 11 |
| Univ. of Western Ontario | \$7,321 | 2 | 2.00 | \$14,642 | \$0 | 12 | 4 | 2 | 0 | 1 |
| TOTAL CANADIAN INSTITUTIONS | \$5,770,558 | 242 | 39.20 | \$2,327,310 | \$903,228 | 445 | 157 | 52 | 141 | 529 |

TABLE 1

Attachment E

| ALL RESPONDENTS: | FY 1994 Royalties Received | FY 1994 Licenses Generating Royalties | FY 1994 Professional FTEs for Licensing | FY 1994 Legal Fees Expended | FY 1994 Legal Fees Reimbursed | FY 1994 Invention Disclosures Received | FY 1994 U.S. Patent Applications Filed | FY 1994 U.S. Patents Issued | FY 1994 Licenses & Options Executed | Total Active Licenses & Options |
|---|----------------------------------|--|--|-----------------------------------|-------------------------------------|---|---|-----------------------------------|--|---------------------------------------|
| U.S. UNIVERSITIES | \$265,932,578 | 3,560 | 238.82 | \$53,345,200 | \$25,600,573 | 6,697 | 3,477 | 1,596 | 2,049 | 8,276 |
| U.S. HOSPITALS & RESEARCH INSTITUTES | \$84,002,583 | 491 | 31.23 | \$12,962,180 | \$6,555,736 | 749 | 575 | 168 | 211 | 978 |
| CANADIAN INSTITUTIONS (U.S. \$) | \$5,770,558 | 242 | 39.20 | \$2,327,310 | \$903,228 | 445 | 157 | 52 | 141 | 529 |
| PATENT MANAGEMENT FIRMS | \$66,104,159 | 241 | 29.00 | \$584,306 | \$177,896 | 852 | 111 | 58 | 83 | 160 |
| TOTAL ALL RESPONDENTS | \$421,809,878 | 4,534 | 338.25 | \$69,218,996 | \$33,237,433 | 8,743 | 4,320 | 1,874 | 2,484 | 9,943 |

| U.S. HOSPITALS & RESEARCH INSTITUTES: | Attachment F | | | |
|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | FY 1994 Aggregate Totals | FY 1993 Aggregate Totals | FY 1992 Aggregate Totals | FY 1991 Aggregate Totals |
| Research Expenditures: Industrial Sources | \$233,764,356 | \$269,026,381 | \$112,600,236 | \$95,320,190 |
| Research Expenditures: Federal Govt. Sources | \$908,117,563 | \$912,999,693 | \$584,130,363 | \$520,892,149 |
| Total Sponsored Research Expenditures | \$1,465,486,884 | \$1,507,164,756 | \$902,266,306 | \$802,177,881 |
| Licenses/Options Executed | 211 | 252 | 192 | 119 |
| Gross Royalties Received | \$84,002,583 | \$73,969,108 | \$60,223,269 | \$45,255,639 |
| Royalties Paid to Other Institutions | \$620,224 | \$438,956 | N.A. | N.A. |
| Licenses/Options Generating Royalties | 491 | 409 | 315 | 268 |
| Legal Fees Expended | \$12,962,180 | \$11,307,985 | \$8,325,439 | \$6,428,582 |
| Legal Fees Reimbursed | \$6,555,736 | \$4,865,384 | \$4,008,997 | \$2,749,296 |
| Invention Disclosures Received | 749 | 772 | 577 | 472 |
| Total U.S. Patent Applications Filed | 575 | 539 | 438 | 416 |
| New U.S. Patent Applications Filed | 287 | 297 | 245 | 220 |
| U.S. Patents Issued | 168 | 173 | N.A. | N.A. |

Attachment F

| PATENT MANAGEMENT FIRMS: | FY 1994 Aggregate Totals | FY 1993 Aggregate Totals | FY 1992 Aggregate Totals | FY 1991 Aggregate Totals |
|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | _____ | _____ | _____ | _____ |
| Research Expenditures: Industrial Sources | \$5,428,773 | \$14,057,779 | \$1,785,000 | \$1,600,000 |
| Research Expenditures: Federal Govt. Sources | \$0 | \$20,000,000 | N.A. | N.A. |
| Total Sponsored Research Expenditures | \$5,428,773 | \$34,057,779 | \$1,785,000 | \$1,600,000 |
| Licenses/Options Executed | 83 | 61 | 34 | 31 |
| Gross Royalties Received | \$66,104,159 | \$58,673,994 | \$50,648,801 | \$43,055,673 |
| Royalties Paid to Other Institutions | \$39,938,894 | \$37,369,565 | N.A. | N.A. |
| Licenses/Options Generating Royalties | 241 | 194 | 142 | 124 |
| Legal Fees Expended | \$584,306 | \$2,722,169 | \$3,071,586 | \$3,250,640 |
| Legal Fees Reimbursed | \$177,896 | \$417,585 | \$156,671 | \$25,995 |
| Invention Disclosures Received | 852 | 818 | 784 | 735 |
| Total U.S. Patent Applications Filed | 111 | 105 | 97 | 54 |
| New U.S. Patent Applications Filed | 29 | 78 | 18 | 29 |
| U.S. Patents Issued | 58 | 50 | N.A. | N.A. |

Attachment G

| U.S. UNIVERSITIES: (Four-Year Recurrent Respondents) | FY 1994 Selected Totals | FY 1993 Selected Totals | FY 1992 Selected Totals | FY 1991 Selected Totals |
|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Research Expenditures: Industrial Sources | \$1,062,521,347 | \$965,770,147 | \$879,799,330 | \$781,994,352 |
| Research Expenditures: Federal Govt. Sources | \$8,795,118,568 | \$8,433,074,672 | \$8,654,640,166 | \$7,949,450,842 |
| Total Sponsored Research Expenditures | \$13,124,420,873 | \$11,936,227,157 | \$11,612,907,108 | \$10,747,916,914 |
| Licenses/Options Executed | 1,636 | 1,389 | 1,306 | 1,007 |
| Gross Royalties Received | \$242,714,472 | \$219,152,772 | \$167,277,695 | \$127,640,425 |
| Licenses/Options Generating Royalties | 3,044 | 2,870 | 2,443 | 2,035 |
| Legal Fees Expended | \$39,617,345 | \$35,807,837 | \$30,795,608 | \$25,905,079 |
| Legal Fees Reimbursed | \$17,176,659 | \$14,828,231 | \$10,481,119 | \$7,431,251 |
| Invention Disclosures Received | 5,428 | 5,388 | 5,180 | 4,607 |
| Total U.S. Patent Applications Filed | 2,858 | 2,419 | 2,017 | 1,800 |
| New U.S. Patent Applications Filed | 1,679 | 1,569 | 1,380 | 1,235 |

See Note 4, p. 9.

Attachment G

| CANADIAN INSTITUTIONS (U.S. \$): (Four-Year Recurrent Respondents) | FY 1994 Selected Totals | FY 1993 Selected Totals | FY 1992 Selected Totals | FY 1991 Selected Totals |
|---|--|--|--|--|
| Research Expenditures: Industrial Sources | \$52,563,175 | \$45,632,883 | \$46,225,600 | \$44,914,165 |
| Research Expenditures: Federal Govt. Sources | \$231,885,226 | \$237,751,923 | \$252,342,400 | \$257,387,499 |
| Total Sponsored Research Expenditures | \$570,269,662 | \$595,891,473 | \$446,060,000 | \$455,767,501 |
| Licenses/Options Executed | 84 | 90 | 47 | 43 |
| Gross Royalties Received | \$4,329,610 | \$4,082,835 | \$4,153,048 | \$3,314,127 |
| Licenses/Options Generating Royalties | 169 | 141 | 111 | 109 |
| Legal Fees Expended | \$1,256,326 | \$1,223,395 | \$638,877 | \$495,004 |
| Legal Fees Reimbursed | \$580,725 | \$550,619 | \$235,950 | \$286,521 |
| Invention Disclosures Received | 344 | 284 | 275 | 235 |
| Total U.S. Patent Applications Filed | 122 | 74 | 93 | 71 |
| New U.S. Patent Applications Filed | 81 | 51 | 79 | 57 |

See Note 4, p. 9.

Suggested Citation

The Association of University Technology Managers, Inc., report entitled, *AUTM Licensing Survey: FY 1994 Survey Summary and Selected Data FY 1991 - FY 1994*.

Availability of Publication

For information on the price and availability of the *FY 1994 Survey Summary and Selected Data FY 1991 - FY 1994* report or the *Full Report*, contact Ms. Penny Dalziel, 49 East Avenue, Norwalk, CT 06851, Phone: (203) 845-9015, Fax: (203) 847-1304.

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Attachment G

| ALL RESPONDENTS: (Four-Year Recurrent Respondents, Excluding Patent Management Firms) | FY 1994 Selected Totals | FY 1993 Selected Totals | FY 1992 Selected Totals | FY 1991 Selected Totals |
|--|--|--|--|--|
| Research Expenditures: Industrial Sources | \$1,247,191,896 | \$1,142,236,465 | \$1,033,332,166 | \$919,815,707 |
| Research Expenditures: Federal Govt. Sources | \$9,703,042,460 | \$9,303,740,340 | \$9,471,500,929 | \$8,718,882,490 |
| Total Sponsored Research Expenditures | \$14,757,704,765 | \$13,546,135,450 | \$12,917,913,414 | \$11,980,346,296 |
| Licenses/Options Executed | 1,892 | 1,652 | 1,539 | 1,160 |
| Gross Royalties Received | \$318,258,329 | \$285,343,792 | \$216,843,325 | \$162,983,618 |
| Licenses/Options Generating Royalties | 3,625 | 3,349 | 2,841 | 2,385 |
| Legal Fees Expended | \$50,356,471 | \$45,442,313 | \$39,446,385 | \$32,617,462 |
| Legal Fees Reimbursed | \$23,329,895 | \$19,883,086 | \$14,596,393 | \$10,400,384 |
| Invention Disclosures Received | 6,324 | 6,257 | 6,018 | 5,306 |
| Total U.S. Patent Applications Filed | 3,465 | 2,932 | 2,532 | 2,282 |
| New U.S. Patent Applications Filed | 1,994 | 1,853 | 1,690 | 1,509 |

See Note 4, p. 9.

Attachment G

| U.S. HOSPITALS & RESEARCH INSTITUTES: (Four-Year Recurrent Respondents) | FY 1994 Selected Totals | FY 1993 Selected Totals | FY 1992 Selected Totals | FY 1991 Selected Totals |
|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Research Expenditures: Industrial Sources | \$132,107,374 | \$130,833,435 | \$107,307,236 | \$92,907,190 |
| Research Expenditures: Federal Govt. Sources | \$676,038,666 | \$632,913,745 | \$564,518,363 | \$512,044,149 |
| Total Sponsored Research Expenditures | \$1,063,014,230 | \$1,014,016,820 | \$858,946,306 | \$776,661,881 |
| Licenses/Options Executed | 172 | 173 | 186 | 110 |
| Gross Royalties Received | \$71,214,247 | \$62,108,185 | \$45,412,582 | \$32,029,066 |
| Licenses/Options Generating Royalties | 412 | 338 | 287 | 241 |
| Legal Fees Expended | \$9,482,800 | \$8,411,081 | \$8,011,900 | \$6,217,379 |
| Legal Fees Reimbursed | \$5,572,511 | \$4,504,236 | \$3,879,324 | \$2,682,612 |
| Invention Disclosures Received | 552 | 585 | 563 | 464 |
| Total U.S. Patent Applications Filed | 485 | 439 | 422 | 411 |
| New U.S. Patent Applications Filed | 234 | 233 | 231 | 217 |

See Note 4, p. 9.

Attachment F

| ALL RESPONDENTS: | FY 1994 Aggregate Totals | FY 1993 Aggregate Totals | FY 1992 Aggregate Totals | FY 1991 Aggregate Totals |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | <hr/> | <hr/> | <hr/> | <hr/> |
| Research Expenditures: Industrial Sources | \$1,666,379,989 | \$1,561,864,199 | \$1,166,399,938 | \$1,022,219,553 |
| Research Expenditures: Federal Govt. Sources | \$11,821,477,169 | \$11,395,104,446 | \$10,393,561,887 | \$9,275,106,157 |
| Total Sponsored Research Expenditures | \$18,213,718,418 | \$17,103,947,203 | \$14,412,989,520 | \$12,957,480,588 |
| Licenses/Options Executed | 2,484 | 2,227 | 1,741 | 1,278 |
| Gross Royalties Received | \$421,809,878 | \$380,212,419 | \$287,384,577 | \$221,607,337 |
| Royalties Paid to Other Institutions | \$61,576,496 | \$57,366,590 | N.A. | N.A. |
| Licenses/Options Generating Royalties | 4,534 | 4,198 | 3,377 | 2,711 |
| Legal Fees Expended | \$69,218,996 | \$66,214,161 | \$45,629,290 | \$37,250,399 |
| Legal Fees Reimbursed | \$33,237,433 | \$28,383,312 | \$15,732,830 | \$10,845,638 |
| Invention Disclosures Received | 8,743 | 8,581 | 7,345 | 6,337 |
| Total U.S. Patent Applications Filed | 4,320 | 3,835 | 2,968 | 2,469 |
| New U.S. Patent Applications Filed | 2,429 | 2,433 | 1,951 | 1,643 |
| U.S. Patents Issued | 1,874 | 1,603 | N.A. | N.A. |

Attachment F

| CANADIAN INSTITUTIONS: | FY 1994 Aggregate Totals | FY 1993 Aggregate Totals | FY 1992 Aggregate Totals | FY 1991 Aggregate Totals |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | (U.S. \$) | (U.S. \$) | (U.S. \$) | (U.S. \$) |
| Research Expenditures: Industrial Sources | \$64,273,110 | \$55,746,806 | \$46,953,659 | \$46,045,723 |
| Research Expenditures: Federal Govt. Sources | \$310,482,872 | \$300,586,085 | \$262,775,142 | \$267,509,935 |
| Total Sponsored Research Expenditures | \$684,158,438 | \$687,047,338 | \$472,420,978 | \$484,021,929 |
| Licenses/Options Executed | 141 | 177 | 54 | 49 |
| Gross Royalties Received | \$5,770,558 | \$5,299,502 | \$4,153,048 | \$3,314,127 |
| Royalties Paid to Other Institutions | \$243,174 | \$35,398 | N.A. | N.A. |
| Licenses/Options Generating Royalties | 242 | 182 | 111 | 109 |
| Legal Fees Expended | \$2,327,310 | \$1,933,584 | \$698,829 | \$524,337 |
| Legal Fees Reimbursed | \$903,228 | \$649,969 | \$235,950 | \$286,521 |
| Invention Disclosures Received | 445 | 393 | 284 | 250 |
| Total U.S. Patent Applications Filed | 157 | 92 | 94 | 73 |
| New U.S. Patent Applications Filed | 98 | 65 | 80 | 59 |
| U.S. Patents Issued | 52 | 73 | N.A. | N.A. |

Attachment F

| U.S. UNIVERSITIES: | FY 1994 Aggregate Totals | FY 1993 Aggregate Totals | FY 1992 Aggregate Totals | FY 1991 Aggregate Totals |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Research Expenditures: Industrial Sources | \$1,362,913,750 | \$1,223,033,233 | \$1,005,061,043 | \$879,253,640 |
| Research Expenditures: Federal Govt. Sources | \$10,602,876,734 | \$10,161,518,668 | \$9,546,656,382 | \$8,486,704,073 |
| Total Sponsored Research Expenditures | \$16,058,644,323 | \$14,875,677,330 | \$13,036,517,236 | \$11,669,680,778 |
| Licenses/Options Executed | 2,049 | 1,737 | 1,461 | 1,079 |
| Gross Royalties Received | \$265,932,578 | \$242,269,815 | \$172,359,459 | \$129,981,898 |
| Royalties Paid to Other Institutions | \$20,774,204 | \$19,522,671 | N.A. | N.A. |
| Licenses/Options Generating Royalties | 3,560 | 3,413 | 2,809 | 2,210 |
| Legal Fees Expended | \$53,345,200 | \$50,250,423 | \$33,533,436 | \$27,046,840 |
| Legal Fees Reimbursed | \$25,600,573 | \$22,450,374 | \$11,331,212 | \$7,783,826 |
| Invention Disclosures Received | 6,697 | 6,598 | 5,700 | 4,880 |
| Total U.S. Patent Applications Filed | 3,477 | 3,099 | 2,339 | 1,926 |
| New U.S. Patent Applications Filed | 2,015 | 1,993 | 1,608 | 1,335 |
| U.S. Patents Issued | 1,596 | 1,307 | N.A. | N.A. |

TABLE 1

Attachment E

(Ranked by FY 1994 Royalties Received)

| PATENT MANAGEMENT FIRMS: | | | | | | | | | | |
|--------------------------------------|----------------------------------|--|--|-----------------------------------|-------------------------------------|---|---|-----------------------------------|--|---------------------------------------|
| Name of Institution | FY 1994 Royalties Received | FY 1994 Licenses Generating Royalties | FY 1994 Professional FTEs for Licensing | FY 1994 Legal Fees Expended | FY 1994 Legal Fees Reimbursed | FY 1994 Invention Disclosures Received | FY 1994 U.S. Patent Applications Filed | FY 1994 U.S. Patents Issued | FY 1994 Licenses & Options Executed | Total Active Licenses & Options |
| Research Corporation Technologies | \$59,141,000 | 158 | 16.00 | N.A. | N.A. | 671 | 61 | 20 | 44 | N.A. |
| Competitive Technologies, Inc. (CTI) | \$6,700,000 | 56 | 12.00 | \$251,000 | \$15,000 | 72 | 15 | 15 | 23 | 112 |
| Center for Innovative Technology | \$263,159 | 27 | 1.00 | \$333,306 | \$162,896 | 109 | 35 | 23 | 16 | 48 |
| TOTAL PATENT MNGMNT. FIRMS | \$66,104,159 | 241 | 29.00 | \$584,306 | \$177,896 | 852 | 111 | 58 | 83 | 160 |

TABLE 1

Attachment E

(Ranked by FY 1994 Royalties Received)

| U.S. HOSPITALS & RESEARCH INSTITUTES: | FY 1994 Royalties Received | FY 1994 Licenses Generating Royalties | FY 1994 Professional FTEs for Licensing | FY 1994 Legal Fees Expended | FY 1994 Legal Fees Reimbursed | FY 1994 Invention Disclosures Received | FY 1994 U.S. Patent Applications Filed | FY 1994 U.S. Patents Issued | FY 1994 Licenses & Options Executed | Total Active Licenses & Options |
|---|----------------------------------|--|--|-----------------------------------|-------------------------------------|---|---|-----------------------------------|--|---------------------------------------|
| Sloan Kettering Institute for Cancer Res. | \$31,500,000 | 16 | 1.00 | \$570,000 | N.A. | 28 | 47 | 10 | 7 | 47 |
| City of Hope National Medical Ctr. | \$23,936,611 | 18 | 1.25 | N.A. | \$32,330 | 21 | 26 | 1 | 5 | 41 |
| Health Research, Inc. | \$4,992,972 | 20 | 0.50 | \$212,169 | \$11,000 | 11 | 7 | 3 | 7 | 51 |
| Brigham & Women's Hospital | \$4,068,103 | 33 | 1.50 | \$1,266,890 | \$650,000 | 45 | 43 | 23 | 23 | 57 |
| SRI International | \$4,000,000 | 22 | 1.00 | \$1,000,000 | \$160,000 | 95 | 37 | 26 | 13 | 47 |
| Mayo Foundation | \$3,747,000 | 89 | 5.00 | \$279,000 | \$49,000 | 124 | 18 | 3 | 42 | 155 |
| Wistar Institute | \$3,700,000 | 27 | 2.00 | \$575,000 | \$24,000 | 9 | 8 | 1 | 6 | 61 |
| Dana-Farber Cancer Institute | \$3,159,952 | 30 | 2.50 | \$993,533 | \$117,842 | 65 | 57 | 18 | 10 | 76 |
| Massachusetts General Hospital | \$984,356 | 28 | 3.50 | \$3,648,965 | \$2,901,381 | 95 | 128 | 24 | 16 | 93 |
| Salk Institute | \$915,646 | 79 | 1.80 | \$1,588,606 | \$1,213,791 | 20 | 47 | 15 | 18 | 156 |
| Children's Hospital, Boston | \$830,497 | 19 | 2.50 | \$478,613 | \$137,132 | 62 | 49 | 8 | 12 | 24 |
| Fred Hutchinson Cancer Res. Ctr. | \$614,104 | 50 | 1.50 | \$194,500 | \$46,500 | 31 | 29 | 7 | 14 | 69 |
| Children's Hospital of Philadelphia | \$573,500 | 4 | 0.50 | \$183,380 | \$100,000 | 14 | 12 | 5 | 2 | 6 |
| New England Medical Center | \$357,000 | 12 | 1.50 | \$417,000 | \$268,000 | 16 | 11 | 8 | 16 | 31 |
| Houston Advanced Research Center | \$292,318 | 2 | 1.30 | \$160,900 | \$79,000 | 6 | 6 | 4 | 3 | 6 |
| Fox Chase Cancer Center | \$95,364 | 10 | 1.00 | \$62,000 | \$1,195 | 22 | 21 | 1 | 3 | 11 |
| St. Jude Children's Research Hospital | \$78,192 | 17 | 0.33 | \$82,931 | \$41,000 | 8 | 3 | 0 | 5 | 17 |
| Woods Hole Oceanographic Inst. | \$76,000 | 3 | 1.00 | \$38,000 | \$0 | 2 | 1 | 4 | 1 | 7 |
| California Pacific Medical Ctr. Res. Inst. | \$50,000 | 1 | 0.05 | \$20,300 | \$6,200 | 1 | 1 | 0 | 1 | 2 |
| National Jewish Center | \$30,968 | 11 | 0.00 | \$130,182 | \$15,365 | 14 | 7 | N.A. | 3 | 12 |
| Albert Einstein Healthcare Network | \$0 | 0 | 1.00 | \$4,000 | N.A. | 10 | 1 | 1 | N.A. | N.A. |
| La Jolla Cancer Research Fndtn. | \$0 | 0 | 0.25 | \$1,000,000 | \$700,000 | 48 | 12 | 2 | 3 | 7 |
| Ramsey Foundation | \$0 | 0 | 0.20 | \$18,211 | \$0 | 0 | 3 | 3 | 0 | 0 |
| Rhode Island Hospital | \$0 | 0 | 0.05 | \$38,000 | \$2,000 | 2 | 1 | 1 | 1 | 2 |
| TOTAL U.S. HOSPITALS & RESEARCH INSTITUTES | \$84,002,583 | 491 | 31.23 | \$12,962,180 | \$6,555,736 | 749 | 575 | 168 | 211 | 978 |

TABLE 1

Attachment E

(Ranked by FY 1994 Royalties Received)

| U.S. UNIVERSITIES: Name of Institution | FY 1994 Royalties Received | FY 1994 Licenses Generating Royalties | FY 1994 Professional FTEs for Licensing | FY 1994 Legal Fees Expended | FY 1994 Legal Fees Reimbursed | FY 1994 Invention Disclosures Received | FY 1994 U.S. Patent Applications Filed | FY 1994 U.S. Patents Issued | FY 1994 Licenses & Options Executed | Total Active Licenses & Options |
|---|----------------------------------|--|--|-----------------------------------|-------------------------------------|---|---|-----------------------------------|--|---------------------------------------|
| Penn State University | \$476,132 | 36 | 2.00 | \$328,724 | \$102,096 | 102 | 41 | 16 | 22 | N.A. |
| Oregon Health Sciences University | \$434,721 | 23 | 1.20 | \$304,832 | \$86,308 | 23 | 26 | 10 | 12 | 64 |
| Univ. of Pittsburgh | \$434,065 | 15 | 0.60 | \$566,291 | \$67,000 | 32 | 23 | 14 | 9 | 27 |
| Univ. of Rhode Island | \$375,000 | 5 | 1.00 | \$75,000 | \$20,000 | 16 | 10 | 5 | 3 | 6 |
| Princeton University | \$359,000 | 11 | 0.70 | \$89,000 | N.A. | 52 | 29 | 9 | 12 | 43 |
| Brown University Research Fndtn | \$295,841 | 9 | 0.75 | \$62,466 | \$0 | 19 | 14 | 5 | 5 | 9 |
| Univ. of Texas Hlth Sci Ctr, San Antonio | \$286,975 | 15 | 1.50 | \$534,252 | \$250,000 | 26 | 12 | 8 | 9 | 54 |
| Mississippi State University | \$283,399 | 3 | 0.25 | \$30,984 | \$0 | 12 | 4 | 0 | 2 | 7 |
| Kansas State University Research Fndtn. | \$276,563 | 23 | 1.50 | \$271,818 | \$95,349 | 30 | 9 | 20 | 11 | 37 |
| Univ. of Maryland, Baltimore | \$274,127 | 10 | 4.00 | \$135,464 | \$54,853 | 56 | 14 | 8 | 6 | 22 |
| Louisiana State University | \$254,752 | 15 | 1.00 | \$100,000 | \$39,673 | 31 | 21 | 6 | 6 | 43 |
| Univ. of Arkansas, Fayetteville | \$250,670 | 10 | 0.50 | \$128,480 | \$6,957 | 26 | 9 | 8 | 1 | 16 |
| Colorado State University | \$227,891 | 19 | 0.50 | \$101,604 | \$29,721 | 48 | 7 | 2 | 5 | 32 |
| Univ. of Delaware | \$227,754 | 10 | 0.30 | \$119,046 | \$16,668 | 13 | 7 | 4 | 5 | 34 |
| Univ. of Arizona | \$180,331 | 22 | 0.75 | \$111,475 | \$89,731 | 74 | 17 | 9 | 11 | 72 |
| Wake Forest University | \$176,814 | 10 | 1.60 | \$137,285 | \$52,650 | 20 | 7 | 3 | 6 | 16 |
| Univ. of Central Florida | \$173,750 | 5 | 0.50 | \$51,156 | \$0 | 26 | 17 | 5 | 0 | 9 |
| Dartmouth College | \$169,119 | 27 | 0.00 | \$144,404 | \$56,155 | 13 | 14 | 7 | 7 | 27 |
| Washington State University | \$165,210 | 23 | 1.50 | \$113,524 | \$72,932 | 28 | 13 | 7 | 14 | 42 |
| Georgetown University | \$153,777 | 10 | 1.00 | \$419,944 | \$112,000 | 37 | 9 | 6 | 9 | 28 |
| Univ. of Texas M.D. Anderson Cancer Ctr. | \$150,000 | 9 | 3.00 | \$757,000 | \$328,000 | 48 | 23 | 17 | 22 | 28 |
| Univ. of Massachusetts Medical Center | \$117,753 | 14 | 2.00 | \$137,318 | N.A. | 26 | 16 | 4 | 1 | 15 |
| Univ. of Akron | \$112,435 | 8 | 1.00 | \$400,000 | \$0 | 27 | 22 | 15 | 9 | 11 |
| Brandeis University | \$110,000 | 10 | 0.35 | \$31,658 | \$17,916 | 13 | 8 | 3 | 8 | 28 |
| Univ. of Miami | \$108,448 | 12 | 2.50 | \$120,174 | \$61,816 | 68 | 8 | 3 | 25 | 38 |
| Hahnemann University | \$105,000 | 12 | 2.00 | \$48,000 | \$28,000 | 16 | 19 | 3 | 8 | 15 |
| Syracuse University | \$102,350 | 15 | 1.00 | \$79,644 | \$30,738 | 12 | 3 | 8 | 8 | 19 |
| Tufts University | \$98,863 | 11 | 1.00 | \$150,000 | \$0 | 45 | 16 | 7 | 7 | 21 |
| Univ. of Kansas | \$96,226 | 8 | 3.00 | \$63,359 | \$5,900 | 51 | 10 | 3 | 8 | 11 |
| Lehigh University | \$85,000 | 5 | N.A. | \$28,000 | \$7,500 | 25 | 13 | 5 | 4 | 14 |
| Ball State University | \$67,762 | 6 | 0.00 | N.A. | N.A. | 23 | 3 | 1 | 2 | 8 |

TABLE 1

Attachment E

(Ranked by FY 1994 Royalties Received)

| U.S. UNIVERSITIES: | FY 1994 Royalties Received | FY 1994 Licenses Generating Royalties | FY 1994 Professional FTEs for Licensing | FY 1994 Legal Fees Expended | FY 1994 Legal Fees Reimbursed | FY 1994 Invention Disclosures Received | FY 1994 U.S. Patent Applications Filed | FY 1994 U.S. Patents Issued | FY 1994 Licenses & Options Executed | Total Active Licenses & Options |
|---|----------------------------------|--|--|-----------------------------------|-------------------------------------|---|---|-----------------------------------|--|---------------------------------------|
| Univ. of California System | \$50,210,000 | 481 | 38.80 | \$6,442,000 | \$4,452,000 | 559 | 389 | 126 | 138 | 870 |
| Stanford University | \$37,700,000 | 200 | 9.00 | \$2,200,000 | \$806,000 | 165 | 84 | 60 | 150 | 829 |
| Columbia University | \$26,746,141 | 104 | 4.60 | \$1,279,363 | \$82,276 | 101 | 53 | 20 | 39 | 276 |
| Michigan State University | \$14,556,761 | 28 | 2.25 | \$398,188 | \$115,680 | 82 | 46 | 20 | 16 | 55 |
| Univ. of Washington/Wash. Res. Fndtn. | \$12,300,000 | 87 | 9.00 | \$817,000 | \$50,000 | 153 | 58 | 15 | 39 | 166 |
| Iowa State University | \$9,600,000 | 45 | 4.00 | \$4,900,000 | \$3,800,000 | 139 | 81 | 43 | 93 | 168 |
| W.A.R.F./Univ. of Wisconsin-Madison | \$8,348,713 | 75 | 3.00 | \$2,771,682 | \$886,373 | 134 | 183 | 51 | 35 | 182 |
| Florida State University | \$6,771,968 | 9 | 0.50 | \$668,134 | \$522,119 | 15 | 24 | 11 | 3 | 10 |
| Harvard University | \$5,817,671 | 99 | 6.80 | \$1,700,000 | \$1,200,000 | 111 | 91 | 28 | 68 | 219 |
| Univ. of Florida | \$5,177,050 | 20 | 1.00 | \$384,460 | \$554,251 | 75 | 66 | 45 | 22 | 129 |
| Univ. of Rochester | \$4,904,405 | 10 | 0.50 | \$271,149 | \$52,834 | 35 | 11 | 10 | 10 | 42 |
| Univ. of Virginia Patents Fndtn. | \$4,635,032 | 38 | 1.00 | \$212,142 | \$205,655 | 43 | 30 | 6 | 17 | 42 |
| Massachusetts Inst. of Technology (MIT) | \$4,560,000 | 163 | 9.60 | \$3,208,000 | \$1,360,000 | 280 | 203 | 100 | 74 | 337 |
| Clemson University | \$4,400,000 | 7 | 0.50 | \$135,629 | \$6,835 | 30 | 11 | 7 | 3 | 12 |
| Tulane University | \$3,816,851 | 14 | 1.25 | \$150,737 | \$91,569 | 17 | 9 | 10 | 7 | 55 |
| Washington University | \$3,100,000 | 68 | 2.60 | \$611,000 | \$447,045 | 19 | 51 | 19 | 44 | 130 |
| Univ. of Texas Southwestern Med. Ctr. | \$2,673,000 | 27 | 0.55 | \$645,022 | \$150,217 | 43 | 31 | 12 | 8 | 60 |
| California Institute of Technology | \$2,650,000 | 25 | 1.00 | \$604,000 | \$143,000 | 298 | 58 | 52 | 18 | 60 |
| Rutgers, The State University of NJ | \$2,452,000 | 58 | 3.00 | \$743,373 | \$503,151 | 58 | 54 | 21 | 14 | 102 |
| Johns Hopkins University | \$2,297,899 | 103 | 4.25 | \$1,055,227 | \$704,379 | 182 | 85 | 32 | 52 | 234 |
| New York University | \$2,000,000 | 15 | N.A. | \$800,000 | \$355,000 | 48 | N.A. | N.A. | N.A. | N.A. |
| Univ. of Cincinnati | \$1,976,884 | 10 | 0.50 | \$94,067 | \$47,118 | 36 | 21 | 8 | 7 | 37 |
| Univ. of Utah | \$1,938,828 | 51 | 3.00 | \$290,633 | \$36,855 | 145 | 46 | 25 | 44 | 121 |
| Baylor College of Medicine | \$1,900,000 | 76 | 4.00 | \$468,000 | N.A. | 65 | 12 | 8 | 35 | 145 |
| Georgia Institute of Technology | \$1,872,257 | 27 | 1.00 | \$348,045 | \$69,378 | 132 | 50 | 17 | 23 | 81 |
| Yale University | \$1,650,000 | 56 | 2.00 | \$300,000 | \$90,000 | 89 | 23 | 13 | 13 | 155 |
| North Carolina State University | \$1,632,000 | 37 | 2.50 | \$720,000 | \$368,400 | 86 | 51 | 40 | 39 | 160 |
| Univ. of Missouri System | \$1,565,184 | 20 | 0.50 | \$221,144 | \$123,244 | 55 | 14 | 8 | 19 | 56 |
| Duke University | \$1,556,163 | 47 | 3.00 | \$731,331 | \$381,531 | 98 | 73 | 30 | 25 | 144 |
| Univ. of Michigan | \$1,529,000 | 50 | 4.50 | \$1,142,800 | \$593,400 | 97 | 61 | 28 | 29 | 114 |
| Carnegie Mellon University | \$1,507,000 | 17 | 2.00 | \$378,983 | \$80,581 | 66 | 10 | 6 | 14 | 33 |

**LIST OF TABLES
FOR
FOUR-YEAR RECURRENT RESPONDENTS
(FULL REPORT)***

| | |
|-----------------|--|
| Table 20 | Research Expenditures: Industrial Sources for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 21 | Research Expenditures: Federal Government Sources for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 22 | Total Sponsored Research Expenditures for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 23 | Licenses & Options Executed for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 24 | Gross Royalties Received for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 25 | Licenses & Options Generating Royalties for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 26 | Legal Fees Expended for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 27 | Legal Fees Reimbursed for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 28 | Invention Disclosures Received for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 29 | Total U.S. Patent Applications Filed for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 30 | New U.S. Patent Applications Filed for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |

** As stated in the Foreword, the Full Report is available separately.*

Attachment C**LIST OF TABLES
(FULL REPORT)***

| | |
|-----------------|---|
| Table 1 | Gross Royalties Received and Facts & Figures for Fiscal Year 1994 |
| Table 2 | Professional FTEs for Technology Transfer and Licensing Activities for Fiscal Year (FY) 1994, FY 1993, and FY 1992 |
| Table 3 | Support Staff FTEs for Technology Transfer and Licensing Activities for Fiscal Year (FY) 1994, FY 1993, and FY 1992 |
| Table 4 | Sponsored Research Expenditures for Fiscal Year (FY) 1994 |
| Table 5 | Research Expenditures: Industrial Sources for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 6 | Research Expenditures: Federal Government Sources for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 7 | Total Sponsored Research Expenditures for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 8 | Licenses & Options Executed for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 9 | New Research Funding Linked to a License for Fiscal Year (FY) 1994 |
| Table 10 | Gross Royalties Received for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 11 | Licenses & Options Generating Royalties for Fiscal Year (FY) 1994, FY 1993, FY 1992, and FY 1991 |
| Table 12 | Royalties Paid to Other Institutions for Fiscal Year (FY) 1994 and FY 1993 |

CONTINUES ON NEXT PAGE...

Total U.S. Patent
Applications Filed

Total U.S. Patent Applications Filed includes any filing made during the year requested, including new filings, CIPs, continuations, divisionals, and reissues.

New U.S. Patent
Applications Filed

New U.S. Patent Applications Filed is a subset of Total U.S. Patent Applications Filed. It does not include continuations, divisionals, or reissues, and typically does not include CIPs. A CIP may only be counted as a new invention if filed with substantially new matter.

U.S. Patents Issued

U.S. Patents Issued to your institution in the year requested.

8. How many *licenses/options* did your institution *execute in the year* indicated? How many licenses/options are *active*? How many of these licenses/options *include equity*?

The following # of licenses should exclude software end user licenses under \$1,000.

| <i>Year</i> | <i># of Licenses/Options Executed In...</i> | | <i>Total # of Active Licenses/Options</i> | | <i>Total # of Licenses/Options w/ Equity</i> | |
|---------------------------------|---|----------------|---|----------------|--|----------------|
| | <i>U.S.</i> | <i>Foreign</i> | <i>U.S.</i> | <i>Foreign</i> | <i>U.S.</i> | <i>Foreign</i> |
| <i>Fiscal 1994</i> | _____ | _____ | _____ | _____ | _____ | _____ |
| <i>Cumulative for All Years</i> | _____ | _____ | _____ | _____ | _____ | _____ |

9. What was the amount of *royalties* received at your institution and the *total number of licenses/options yielding royalties* in the year indicated? How much of total *royalties received was paid to other institutions*?

| <i>Year</i> | <i>Royalties Received (\$)</i> | <i>Total # of Licenses/Options Yielding Royalties</i> | <i>Royalties Paid to Other Institutions</i> |
|--------------------|--------------------------------|---|---|
| <i>Fiscal 1994</i> | _____ | _____ | _____ |

10. How much did your institution *spend in external legal fees* for patents and/or copyrights? How much did your institution receive in *reimbursements for these fees from licensees*?

| <i>Year</i> | <i>Amount Spent in External Legal Fees</i> | <i>Amount Reimbursed by Licensees</i> |
|--------------------|--|---------------------------------------|
| <i>Fiscal 1994</i> | _____ | _____ |

11. How many *Invention Disclosures were received, U. S. Patent Applications filed, and U. S. Patents Issued to your institution* in the year indicated? Of the total U.S. Patent Applications filed, how many of these filings were *New*?

| <i>Year</i> | <i>Invention Disclosures Received</i> | <i>Total U. S. Patent Applications Filed</i> | <i>New U. S. Patent Applications Filed</i> | <i>U.S. Patents Issued</i> |
|--------------------|---------------------------------------|--|--|----------------------------|
| <i>Fiscal 1994</i> | _____ | _____ | _____ | _____ |

1991 and FY 1992, Royalties Paid to Other Institutions included only those paid by Research Corporation Technologies to universities for whom it managed technologies at \$29 million and \$32 million, respectively, and by Stanford University to the University of California for the Cohen Boyer licenses at \$7 million for each year. In FY 1993, a new question was added to the survey to request these data from all institutions participating in the survey. This resulted in a higher amount of reported Royalties Paid to Other Institutions, most predominantly from Research Corporation Technologies at \$37 million, and from Stanford University, University of California System, Harvard University, and Columbia University, who shared a combined total of approximately \$19.5 million.

¹¹ U.S. Patents Issued was added to the survey after the survey's implementation the first year. These data have only been accrued for FY 1993 and FY 1994.

¹² "Total U.S. Patent Applications Filed" includes any filing during the year, including continuations-in-part (CIPs), continuations, divisionals, and reissues. "New U.S. Patent Applications Filed" is a subset of "Total U.S. Patent Applications Filed."

¹³ Legal fees expended and reimbursed include the amount spent by the institutions in external legal fees for patents and/or copyrights and the amount reimbursed by licensees for these fees, respectively. Direct payment of patenting costs by licensees is not included in the legal fees expended and legal fees reimbursed data.

¹⁴ See AUTM Licensing Survey, question 3, and the definition for "Research Funding" in the Definitions and Instruction page, for the new request on research funding committed. Research Funding should be distinguished from Research Expenditures: Industrial Sources requested in question 7. The former represents funding committed over multiple years that was linked to license or option agreements signed in FY 1994. The latter reflects annual expenditures made at the institution in support of ongoing research activities, which were funded from industrial sources but were not necessarily connected to a license or option agreement.

¹⁵ The reader may wish to refer to the AUTM Public Benefits Survey: Summary of Results, April, 1994, for further examples of impact.

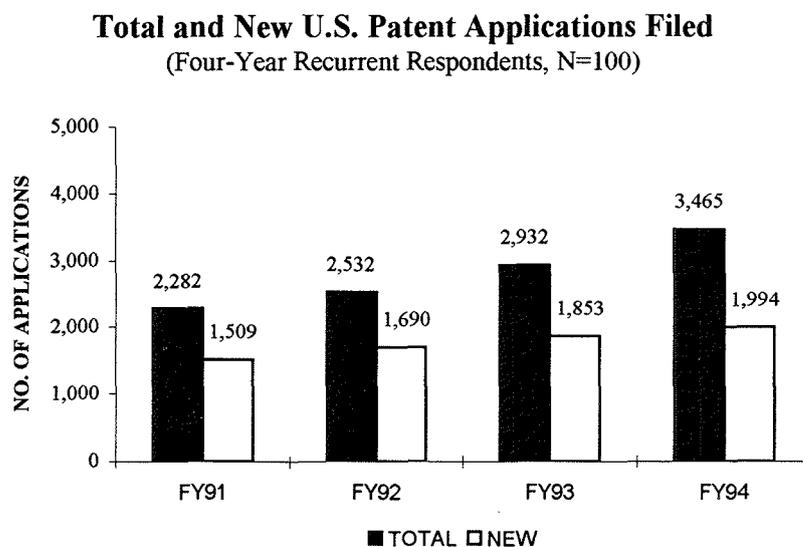
Other Selected Findings

The FY 1994 AUTM Licensing Survey was the first to request data on research funding committed in conjunction with the execution of license and option agreements. Respondents were asked to provide the amount of funding committed, even if it was to be spent over several years. Those who responded reported a total of \$134 million of research funds committed.¹⁴ Many of the participating institutions, however, indicated that although they have received research funds linked to license and option agreements, they do not track this information, and thus could not provide the requested data. In addition, some of the institutions that responded noted that they only track these data on an annual basis, and thus were reporting only a portion of the research funding linked to their agreements in FY 1994. Because of the difficulty in tracking these data and the low response rate to this request, the reported amount of research funding committed for FY 1994 is believed to be understated.

The FY 1994 survey was also the first to ask a question regarding the number of start-up companies initiated in a given year. (The FY 1993 survey had asked for information on the total number of start-up companies initiated since 1980.) Start-up company activity in FY 1994 was 241 companies as compared with a total of 1,169 for the 13-year period 1980-1993, indicating that such activity is occurring at an increased rate.

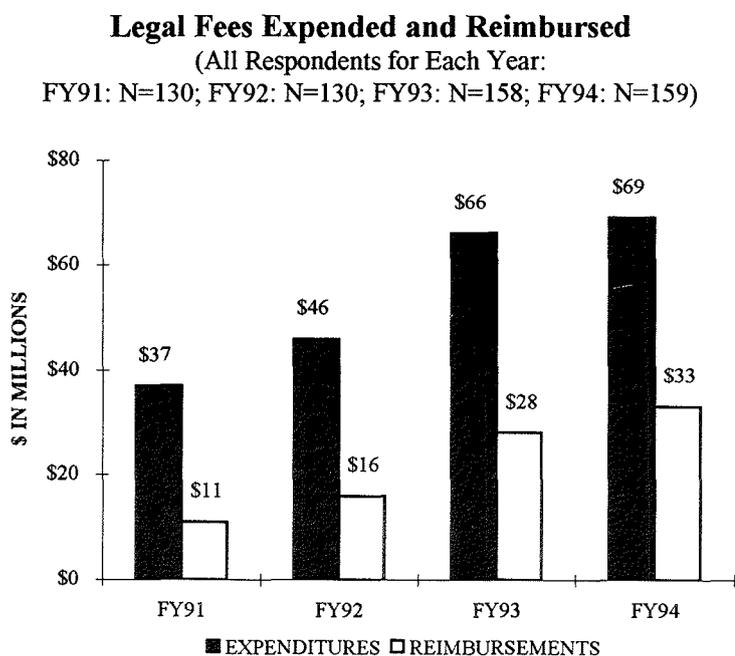
These data and the additional findings presented in the *Full Report* point to a range of impacts of academic technology transfer.¹⁵ Internally, through licensing revenues and commitment of research funds linked to licenses, technology transfer activities have become a positive source of funding for many institutions. The revenues derived supplement those from other sources and take on greater significance as institutions of higher education increasingly confront financial challenges and constraints. In a broader context, across the board acceleration in licensing and patenting activity bode well in regard to the introduction of new products and processes into society that were originated within academic institutions. In addition, there are side benefits such as an increase in industrial sponsored research, economic development associated with product commercialization and small company start-ups, an increase in industrial/academic interactions, and a benefit to society through more rapid translation of academic research to commercial use.

Figure 5B:



As would be expected, the increase in patent prosecution activity was accompanied by an increase in legal fees, which rose to \$69 million in FY 1994.¹³ These costs have been offset by the success of AUTM member institutions at recovering a significantly greater proportion of their patent prosecution expenses. Since FY 1991, legal fee recovery trends have moved steadily upwards, and neared 50% in FY 1994 (see Figure 6).

Figure 6:



SELECTED HIGHLIGHTS

Royalties

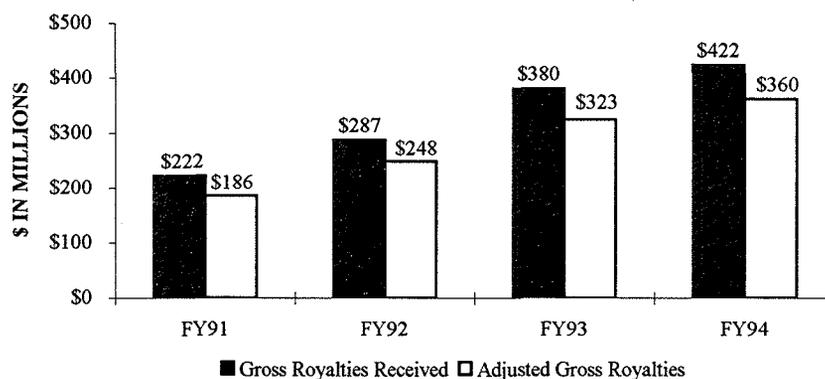
Gross royalties received in FY 1994 increased to \$422 million, while adjusted gross royalties increased to \$360 million. Cumulative gross royalties received by participating institutions since FY 1991 topped \$1.3 billion, and adjusted gross royalties exceeded \$1.1 billion.¹⁰

Figure 2:

Gross Royalties Received and Adjusted Gross Royalties

(All Respondents for Each Year:

FY91: N=130; FY92: N=130; FY93: N=158; FY94: N=159)



Shown below in Figure 3 is a frequency distribution of gross royalties received for survey participants in each year. The number of institutions reporting \$5 million or more increased from 9 to 14 in the last four years, while the number reporting between \$500 thousand and \$5 million increased from 39 to 66.

Figure 3:

Royalty Ranges and No. of Institutions in Each Range

| GROSS ROYALTIES RECEIVED (GRR) | FY 1991 | FY 1992 | FY 1993 | FY 1994 |
|--------------------------------|------------|------------|------------|------------|
| GRR \geq \$20 M | 2 | 4 | 6 | 6 |
| \$ 10 M \leq GRR < \$ 20 M | 6 | 6 | 4 | 2 |
| \$ 5 M \leq GRR < \$ 10 M | 1 | 1 | 3 | 6 |
| \$ 1 M \leq GRR < \$ 5 M | 17 | 27 | 35 | 39 |
| \$ 0.5 M \leq GRR < \$ 1 M | 22 | 16 | 24 | 27 |
| GRR < \$ 0.5 M | 82 | 76 | 86 | 79 |
| Total Participants | 130 | 130 | 158 | 159 |

The second document is entitled "*AUTM Licensing Survey: Fiscal Year 1991 - Fiscal Year 1994*" and is referred to as the *Full Report*. The *Full Report* includes the *FY 1994 Survey Summary*, as well as FY 1991 through FY 1994 institution-by-institution responses to survey questions. Also included are subtotals for the institutions, summarized by the four categories of organizations noted above.

Tables in the *Full Report* have been expanded this year to include new data on committed research funding linked to license and option agreements, royalties paid to other institutions, U.S. patents issued, and start-up companies formed. Also included in the *Full Report* are a series of tables that compare the year to year responses on selected questions of those institutions that have provided four full years of data for the survey.⁵

The Table of Contents for the *Full Report* and a listing of the tables contained in each section can be found in Attachments B and C of the *FY 1994 Survey Summary*, respectively.⁶

Use of the Survey Information

The findings of the AUTM Licensing Survey are intended to be of interest to a broad audience, ranging from government officials and policy makers to university administrators and technology managers who work in the field. The former, for example, should find it especially instructive to track the progress that the field of academic technology transfer has made in facilitating the transformation of research results into commercially available products and processes. This information contributes to an understanding of the public benefits of university-based technology transfer and provides a basis for assessing the economic and societal importance of the field. Those at universities, hospitals, and research institutes can make use of the survey information in self-evaluation and should find value in comparing the performance of their programs with those of other comparable institutions on a range of measures. Data are ranked by the major data elements presented in the tables, which is a practice common when developing statistical reports. Such ordering of the information enables the reader to easily see the range of values, i.e. highest to lowest, and is not intended to make a statement on an institution's performance.

Those of us who have contributed to this project provide these findings with the assurance that the data were carefully collected and that every effort was made to assure their accuracy. We also suggest that this information is best used as a starting place or as a point of departure for more extensive analysis. Clearly, the data presented here support a number of generalizations about the movement of the field. However, academic technology transfer is a complex process and true understanding of its development and impacts can only come through in-depth, thoughtful consideration of the forces at work behind the numbers.

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The products and processes derived from technologies licensed by the academic community have contributed substantially to the public benefit. New diagnostic and therapeutic products have saved lives, reduced suffering and disability, and improved our ability to prevent disease. The products of academic technology have also increased the competitiveness of existing businesses and spawned entire new industries. Some examples are listed below:

- Taxol (Florida State University). A potentially revolutionary anticancer agent. Taxol's sole source prior to this semi-synthesis process was the bark of the Pacific yew tree. Clinical trials show Taxol's unprecedented effectiveness in treating advanced ovarian cancer and its potential for halting breast cancer as well. Taxol is now in widespread use throughout the world.
- Haemophilus b conjugate vaccine (University of Rochester). This was the first vaccine approved for infants since the acceptance of the polio vaccine. This vaccine has reduced bacterial meningitis incidence in children by 94%, according to some studies.
- Hepatitis B vaccine and related gene expression technologies (University of California and University of Washington). A synthetic version of the traditional Hepatitis-B vaccine that is much safer because it is manufactured using genetic engineering techniques and thus does not expose individuals to the live virus. This vaccine is now widely utilized both in the U.S. and abroad.
- Vitamin D and related technologies (W.A.R.F./University of Wisconsin-Madison). Vitamin D derivatives have found application in the prevention and/or treatment of various diseases including osteoporosis, renal osteodystrophy, hypoparathyroidism, and psoriasis.
- Cisplatin and carboplatin cancer treating agents (Michigan State University). Cisplatin and carboplatin are dominant chemotherapy drugs and are used in treating a number of cancer types, either individually or in combination with other drugs.
- Recombinant DNA technology (Stanford University and the University of California). This technology is central to the U.S. biotechnology industry.
- Introduction of DNA into eukaryotic cells (Columbia University). These patents cover processes that are used for making valuable proteins for treating diseases.
- Atomic Force Microscope (AFM) (University of California). The AFM scans the surface of objects and uses sophisticated electronics to interpret the atomic force and create a visual image. This breakthrough technology, which makes it possible to visualize dynamic events in living cells, has been featured on eight covers of the prestigious journal, *Science*.
- Fax technology (Iowa State University). The Iowa State fax technology provided a way to maintain appropriate spacing among words being transmitted online, and was used in fax machines developed in the 1980's.

AUTM's Public Benefit Survey, conducted in 1993, provides a snapshot of additional licensed products that are in the marketplace. Even with only 45 institutions responding and with a survey limit of no more than five products per institution, over 175 products were reported, including a considerable number of pharmaceutical and diagnostic products. Many more products are currently on the market. Many others are under development and will reach the market in the coming years.

AUTM will continue to monitor and report on the activities of its members and hopes to expand the data it collects. Your thoughts on the usefulness of these data and their presentation is appreciated and encouraged.

Joyce Brinton
1995 AUTM President

