

## Why are high-tech small businesses so important to the United States?

**They employ the most, and the most productive, scientists and engineers!**

**On patents per dollar of R&D they are:**

- **5:1 more productive than large businesses and**
- **20:1 more productive than universities!**

U.S. small businesses<sup>1</sup> employ more scientists and engineers than large businesses (32 percent vs 27 percent), and more than universities and federal labs combined (32 percent vs 29 percent).<sup>2</sup> See Figure 1. Yet high-tech small firms receive only 4.3 percent of Federal R&D funds, while larger firms receive 50.3 percent and universities receive 35.3 percent. See Figure 2.

For over three decades, small high-tech firms systematically have been denied access to the Federal R&D funding. The report of the hearings held by the joint House and Senate Small Business Committees in 1978 documented that, “The taxpayers are denied the full utilization of the innovative high-tech small companies in Federal R&D by the procurement bureaucracies that favor large businesses and universities.”<sup>3</sup> These hearings resulted in the 1982 legislation establishing the SBIR (Small Business Innovation Research) program.

The high-tech small businesses generate 5 times more patents per R&D dollar than large businesses. Although small firms spend only 3 percent of the amount that large corporations devote to research and development (R&D), they produce 15 percent of all company patents.<sup>4</sup>

SBIR companies are about 20 times more productive than universities in generating patents per R&D dollar. Table 1 shows that while SBIR companies received only 2.5 percent of the Federal extramural R&D funds they generated over 1.5 times as many patents as universities which received over 30 percent of the funds.<sup>5</sup>

Figure 1. Percentage of Scientists and Engineers Employed In Government, Academia and Business (NSF 2003)

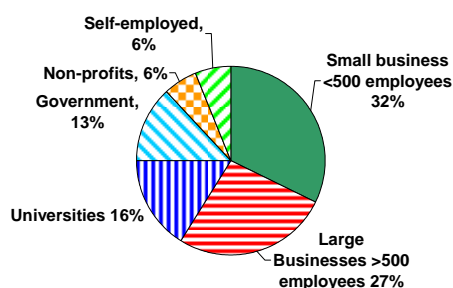


Figure 2. Percentage of Total Extramural Federal R&D Expenditures Received by Academia and Businesses \$81.7 Million (NSF FY-2005)

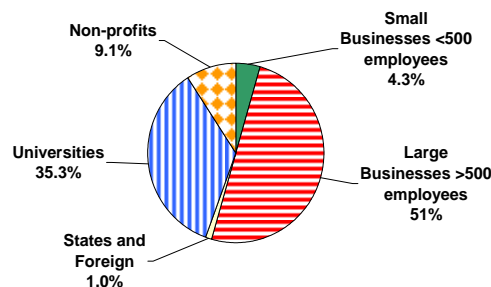


Table 1. SBIR vs University Patent Productivity

Year	University Percentage of Federal Extramural R&D	University Patents	SBIR Percentage of Federal Extramural R&D	SBIR Patents	Patent Productivity: SBIR vs Universities
2002	33.3 %	3,245	2.5 %	4,921	20.2:1
2003	32.5 %	3,215	2.5 %	5,381	21.8:1
2004	31.1 %	3,345	2.5 %	5,091	18.9:1

<sup>1</sup> Small businesses are generally defined by SBA as those with less than 500 employees.

<sup>2</sup> Source: Data for Figures 1 and 2 and Table 1 were generated by the NSF staff for Roland Tibbetts, based on Figures 3-15 and 4-9, Science and Engineering Indicators 2006, NSF, <http://www.nsf.gov/statistics/seind06>.

<sup>3</sup> “Small Business and Innovation.” Report of the House Small Business Committee, 1978.

<sup>4</sup> Source: Ann Eskesen, President, IDI, <http://www.innovation.com>, presentation to the Tibbetts Awards, Sept 2006, Washington, DC, quoting *Rembrandts in the Attic: Unlocking the Hidden Value of Patents*. Kevin G. Rivette and David Kline, Harvard Business School Press 2000.

<sup>5</sup> Source: Ann Eskesen, President, IDI, from IDI’s proprietary SBIR database, the most extensive in the world. The IDI database shows consistency in the SBIR vs university patent productivity over the history of the SBIR program.