



Testimony of

**Jere W. Glover**

*Executive Director*

*Small Business Technology Council*

*Washington, DC*

**REGARDING THE SBIR PROGRAM AT NIH**

***BEFORE THE***

**SENATE COMMITTEE ON SMALL BUSINESS AND ENTREPRENEURSHIP**

**ROCKVILLE, MD FIELD HEARING,**

**SENATOR BENJAMIN L. CARDIN, MARYLAND, CHAIRING**

***22 June 2009***

***On behalf of***

**The Small Business Technology Council and The National Small Business Association**

*(202) 785-4300*

[www.sbtc.org](http://www.sbtc.org)

*(202) 293-8830*

[www.nsba.biz](http://www.nsba.biz)

*SBTC is the nation's largest association of small, technology-based companies in diverse fields, and represents more companies that are active in the federal Small Business Innovation Research (SBIR) Program than any other organization. SBTC is proud to serve as the technology council of the National Small Business Association.*

*Founded in 1937, the National Small Business Association (NSBA) is the nation's oldest nonprofit advocacy organization for small business, serving more than 150,000 small companies throughout the United States.*

Senator Cardin, thank you for holding this very important hearing on the Small Business Innovation Research (SBIR) program at the National Institutes of Health (NIH) and for offering us the opportunity to present our findings and recommendations today. I am Jere Glover, Executive Director of the Small Business Technology Council of the National Small Business Association. I appear here today on behalf of the more than 150,000 small business companies that SBTC and NSBA represent across this Nation.

There are three items I'd like to discuss today:

1. The SBIR program is by far the most successful federal program for efficient, leading-edge innovation, commercialization of advanced technologies, and for job creation in new technology-based industries. Even with its proven success over more than 26 years, the SBIR program still receives only 2.5 percent of the Federal extramural research and development funding. This should be expanded.
2. Unfortunately NIH either doesn't realize the SBIR successes documented by their own reports and the recent National Academy of Sciences Report, or they chose to ignore it. There has been a long history of lack of support for small business innovation at NIH going back over the 30 years that I've been involved in this effort. Their efforts to exclude the SBIR program from the ARRA funds should be reversed.
3. Changing the fundamental definition of small businesses to permit large venture capital firms to access the SBIR program does not serve the taxpayers, the research and innovation agenda of our Nation, or small businesses. It only serves the VC industry itself, and we don't believe they deserve a "bail-out" using funds that Congress allotted to this highly-successful program.

**Item #1: The SBIR program is the best Federal program for converting research to products in the market and creating jobs.**

The recent SBA Fact Sheet on the SBIR program states:<sup>1</sup>

*"Small businesses are the driver of innovation in America. One study, by the SBA Office of Advocacy, of firms that produced more than 15 patents over the period 2002-2006 found that the small firms in this group produced 13 – 14 times more patents per employee than did the large firms, and these patents were cited in applications more often than average patents. **The SBIR program's focus on commercialization turns small business innovation into jobs.***

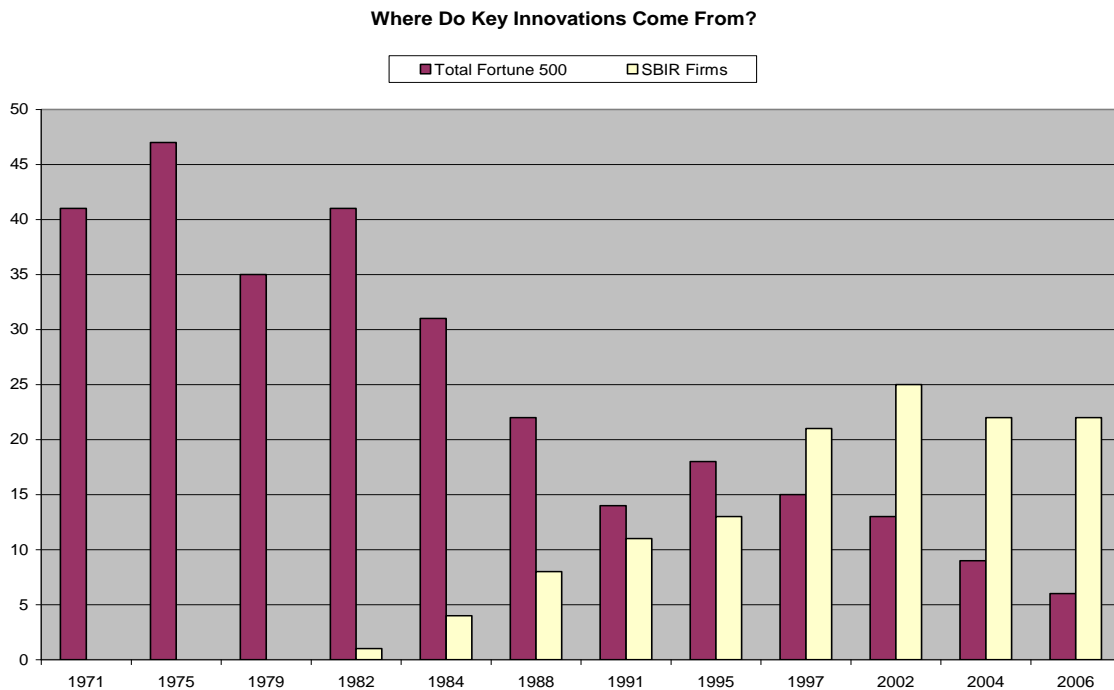
*According to the 2008 National Academies study, SBIR 'is increasing innovation, encouraging participation by small companies in federal R&D, providing support for small firms owned by minorities and women, and resolving research questions for mission agencies in a cost-effective manner'. Some highlights of the SBIR program are:*

- **Job and Revenue Growth:** SBIR awardees generated four times as many jobs and nearly four times as much revenue as comparable firms that did not receive SBIR funding (Lerner 1996).
- **Commercialization:** The National Academies found that about half of Phase II awardees responding to its survey reported bringing their innovations to the market place.
- **Innovation:** One-third of NIH SBIR projects generate at least one patent (National Academies). Moreover, from 2002 to 2006, about 25% of R&D Magazine’s top 100 annual innovations came from companies that received SBIR grants.
- **Broad Small Business Reach:** From 1992 to 2005, nearly 15,000 different firms received at least one Phase II SBIR award (National Academies).”

Expanding on the SBA report, just the SBIR Program – with 2.5 percent of extramural R&D at eleven federal agencies – has been delivering about 25 percent of the nation’s most important innovations every year for the past decade as shown in the chart below, according to a recent study by the Information Technology and Innovation Foundation.<sup>2</sup>

Large companies, which had been delivering about 40% of these top innovations when SBIR started in 1982, now account for less than 5% of them, even with their far greater access to capital.

Universities, which receive more than 10 times the Federal R&D funding than small businesses, only account for around 8% of the key innovations.



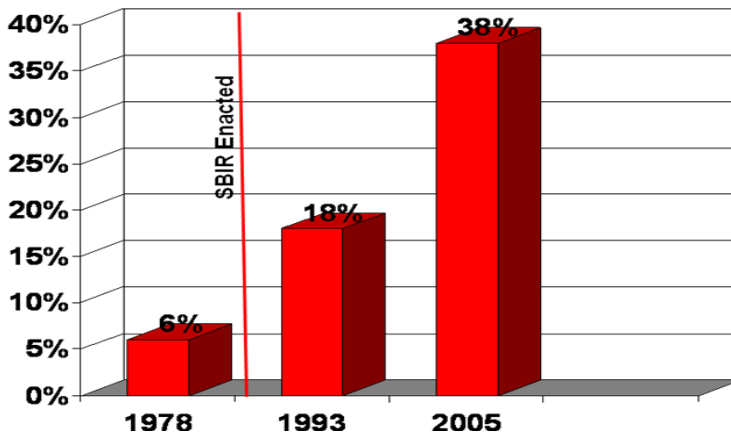
But federal R&D procurement does not reflect this reality. Overall, just 4.3% of R&D goes to small business, and SBIR is over half of that. **The small business share of federal**

**R&D has gone up by less than 2% in the last 30 years. If not for SBIR, the figure would actually have declined.**

(1) **38% OF SCIENTISTS AND ENGINEERS WORK FOR SMALL BUSINESS**

SBIR Program was set up at the time when small businesses employed about 6% of the nation’s scientists and engineers. Now there are over six times as many scientists and engineers choosing small business – 38% altogether. More scientists and engineers work for small companies than for any other sector – large companies, universities, nonprofits, or government.

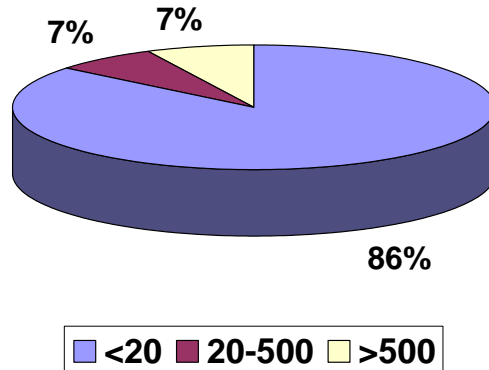
**Percent of U.S. Scientists and Engineers Employed by Companies with Fewer than 500 Employees<sup>3</sup>**



(2) **SMALL BUSINESSES CREATED 93% OF THE NET NEW JOBS FROM 1989 TO 2005)<sup>4</sup>**

Small businesses are by far the most effective instrument for helping the nation grow new jobs. From the time that the Bureau of Census and the SBA Office of Advocacy started tracking net new job creation by company size in 1989 to the most recent data in 2005, small businesses created 22.9 million of the total of 24.6 million net new jobs over these sixteen years.

**Total US Net New Job Creation  
By Company Size  
(1989 to 2005 Cumulative = 24.6 Million Jobs)**



In the periods following a recession, the job creation by small business is even more dramatic. In the three years after the 2001 recession, small businesses created 4.8 million of the total of 3.9 million net new jobs (large businesses continued to shed jobs and *lost* 950,000 jobs over these three years).<sup>5</sup> The very small businesses of the SBIR type (<20 employees) created 3.1 million (79 percent of the total).

**Conclusion:** The SBIR program has been proven effective as documented by GAO and NRC in converting Federal R&D funds to commercially available innovative new technologies faster than other R&D programs, and multiplies job creation in new industries. It is meeting the goals established by Congress and should be expanded.

**Item #2: At NIH the SBIR Program is working quite well – but does not get the credit or support it deserves.**

In the earliest 1978 Congressional studies of the percentage of Federal R&D dollars going to small businesses, we found that NIH had **NO** contracts with small businesses.<sup>6</sup> In subsequent hearings they testified that there were **NO** small businesses that could satisfy their requirements. That was empirically proven wrong by an industry witness at the hearing, and has been abundantly proven wrong by the successful history of the SBIR program at NIH. The NIH SBIR – STTR Success web site<sup>7</sup> lists 69 current success stories where SBIR/STTR companies brought urgently needed health technologies to market quickly and efficiently.

**There is a history of inaccurate information about SBIR by members of by NIH staff.**

- (A) In 1996, the NIH Director, Harold Varmus, MD, provided a clarification letter to Congress and to the Office of Advocacy at SBA correcting some misinformation provided by NIH staff to Congress and to *Science Magazine*. Dr. Varmus pointed out that the NIH scoring system for the SBIR program used a “100 to 500 Scale” for evaluation, versus a “100 to 300 Scale” for R01 programs, and that claims by NIH staff that SBIR projects had worse scores did not accurately reflect lower research quality (at NIH a higher score means a worse score)<sup>8</sup>. As Dr. Varmus stated, “Because of these scoring differences, the NIH resists making any side-by-side comparisons of the quality of a proposal based on the priority scores alone.”
- (B) In recent discussions with the National Research Council staff preparing the Congressionally mandated National Academy of Sciences report on the SBIR program at NIH, the NIH staff again misstated the differences between SBIR (100 to 500) and R01 (100 to 300) scoring as reported in the NAP report:<sup>9</sup>

*“Low relative scores. From discussions with staff, it appears that the paylines for SBIR awards at the different IC’s are substantially higher than for RO1 awards, and these gaps have grown recently. This implies that projects funded through SBIR are receiving worse peer-review scores than projects funded through other mechanisms.*

*NIH management decided not to share scoring data with the research team, so it is difficult to determine whether or to what extent reality matches perceptions in this area. However, it seems likely that these different scores may well be the result of using a selection process that is primarily aimed at selecting academic applications for basic research and adapting it for use with SBIR, which has different objectives and indeed different selection characteristics. For example, commercialization plans are supposed to play an important role in selection for SBIR, but not for other NIH awards. It does not appear that program staff has undertaken research either to substantiate this perception or to investigate possible alternative explanations for differential scores between RO1 and SBIR applications.”[page 133]*

**Need for increased staff and management support:** The NAS report also recommended additional support and management attention to the SBIR program at NIH:

**“III. SUMMARY OF KEY RECOMMENDATIONS ...**

- A. The NIH should retain its distributed management structure for the program while increasing evaluation efforts, improving data collection, obtaining

additional resources, and encouraging upper management attention.”[page 6]

**(C) Misinformation on SBIR Competitiveness at NIH:**

Within the past few months, additional misinformation has been provided to Congress regarding the lack of competitiveness of the SBIR program. This misinformation was used to argue that the SBIR Program should not receive **any** of the billions of dollars in windfall funding that NIH received from the American Recovery and Reinvestment Act (ARRA). SBTC performed an analysis of the comparative competitiveness of the SBIR and the R01 programs at NIH.

That analysis shows that the SBIR program is from 1.7 to 3.6 times **MORE** competitive than NIH’s comparable R01 program. See the chart below:<sup>10</sup>

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
R01 Competitive Ratio	(3.2:1)	(3.1:1)	(3.1:1)	(3.1:1)	(3.2:1)	(3.3:1)	(3.8:1)	(4.3:1)	(4.8:1)	(4.2:1)	(4.3:1)
SBIR Phase I Competitive Ratio	(3.6:1)	(3.6:1)	(3.8:1)	(3.3:1)	(3.7:1)	(4.2:1)	(5:1)	(5.5:1)	(5:1)	(4.2:1)	(3.6:1)
Combined Phase I & II Down-select Competitive Ratio	(7.3:1)	(7.5:1)	(10:1)	(6.3:1)	(7.6:1)	(9.4:1)	(13.5:1)	(15.4:1)	(12.2:1)	(9.9:1)	(7.5:1)
<b>Most Competitive Program</b>	<b>SBIR X 2.3</b>	<b>SBIR X 2.4</b>	<b>SBIR X 3.2</b>	<b>SBIR X 2</b>	<b>SBIR X 2.4</b>	<b>SBIR X 2.8</b>	<b>SBIR X 3.6</b>	<b>SBIR X 3.6</b>	<b>SBIR X 2.4</b>	<b>SBIR X 2.4</b>	<b>SBIR X 1.7</b>

**Information about SBIR provided by NIH to Congress typically omits a number of metrics on which SBIR excels. This omitted information includes:**

**Commercialization:** The highly competitive SBIR program has been proven at NIH (and other agencies) to provide very high commercialization of the research work, compared to other Federal Research programs. According to the NAS study of the SBIR program at NIH, 30.3 percent of the NIH SBIR research projects reached the commercial market, almost the same as DOD’s 31.6 percent.<sup>11</sup> A more recent NRC study found that non-VC

SBIR awardees reached the market 55% of the time and VC owned reached the market 38% of the time.

**Additional investment:** The NRC report at page 55 indicates that SBIR projects generated over \$850,000 each.<sup>12</sup>

**Patents:** The result that between 35 and 45 percent of all companies with SBIR awards developed sufficient technical knowledge to be worth the time and expense of a patent application (and award) is impressive.<sup>13</sup>

**Outreach to women- and minority- owned businesses:** The NAS report also showed that in the NIH SBIR program, women- and minority-owned businesses received a considerably higher percentage of the awards than the approximately 2 percent provided by the Venture Capital industry.<sup>14, 15</sup> [page 57].

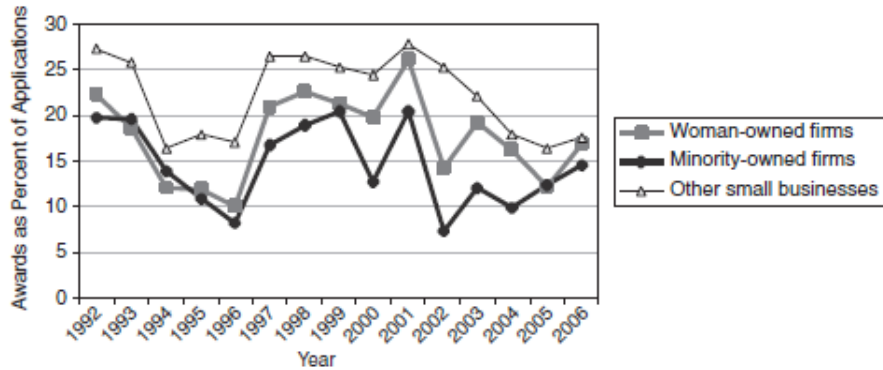


FIGURE 3-11 Success rates for Phase I awards by demographic, 1992-2006.

**National reach compared to the venture capital industry:**

The NIH SBIR program has participation by almost all states as shown in the NRC report. [Table 3-3, Page 47] Compared to the concentration of the VC funding in California, Massachusetts, New York, Texas and Pennsylvania (63.8 % of all VC investments from 1995 to 2005), the NIH SBIR program is providing much needed high-risk capital for advanced research across the United States. (Maryland obtained only 1.9% of the nation’s VC funding.<sup>16</sup>)



**TABLE 3-3 Phase I Success Rates—By State (Winning applications as percent of total applications)**

State	Phase I Success Rate	State	Phase I Success Rate	State	Phase I Success Rate	State	Phase I Success Rate
MA	30.8	WY	25.4	NH	21.2	VA	18.2
UT	30.5	HI	25.1	FL	21.2	MS	18.2
MO	29.7	AZ	24.3	RI	21.0	NY	18.0
WA	29.2	NJ	24.2	MI	21.0	NC	17.8
KY	28.5	LA	24.2	TN	20.8	AR	16.9
TX	27.9	NV	24.2	IL	20.4	MD	16.5
IA	27.2	PR	24.0	IN	20.3	NE	15.4
CT	26.2	PA	24.0	OK	20.2	AL	15.4
MT	25.8	SC	23.8	DC	20.2	WI	14.1
DE	25.8	MN	23.5	OH	19.7	GA	9.8
KS	25.8	ID	23.2	VT	19.3	ND	7.8
CA	25.8	ME	21.6	CO	19.1	OR	7.7
WV	25.7	NM	21.6	SD	18.6	AK	0.0

SOURCE: NRC calculations base on National Institutes of Health data.

**Conclusion:** The SBIR Program at NIH is succeeding even according to the metric that NIH has cited, competitiveness. A broader range of metrics shows that SBIR outperforms comparable programs at NIH on a number of criteria. Overall, NIH’s SBIR program is highly effective and competitive. And as the NAS study noted, NIH’s SBIR program is meeting the goals established by Congress. NIH’s legislative ploy to exclude SBIR from the agency’s ARRA funds should be reversed. Congress should encourage NIH’s senior management and Congressional relations staff to become better informed about the SBIR program. NIH should develop the additional support recommended in the NAS study.

### The Venture Capital Issue

SBTC understands the desire of the venture capital and biotechnology industries to participate in the SBIR program. Many successful SBIR companies graduate to venture investment and acquisition or licensing to large biotech or pharmaceutical companies in Phase III of the SBIR program. We support this and actively work to help make these linkages.

However, we strongly disagree with the VC / biotech proposal to completely change the definition of small business. Companies that are more than 51 percent owned by large VC’s are not small businesses. To permit large biotech and pharmaceutical companies (or any large organizations) to use new or existing venture capital companies to obtain over 51 percent ownership of a company in Phase I or Phase II of the SBIR Program would completely debase the program.

SBTC believes that the following VC issues should be brought before the Committee members:

- (1) The SBIR program is focused entirely on pushing the research boundaries to solve critically important national problems – that is why the solicitations specify the problems that are important to NIH. The VC industry has a sole fiduciary responsibility – to provide the highest return to their Limited Partners (their investors – usually very wealthy individuals, pension funds, insurance companies, and similar large financial organizations).
- (2) The Venture Capital industry has fallen on difficult times in the recent years. This is not a reason to provide them with a “bail-out” using scarce small business research funds. The following chart from a June 10, 2009 report by the Kauffmann Foundation provides a summary of the VC performance in the past 1, 5, and 10 years.<sup>17</sup>

### Venture Capital Performance

Period*	Venture Capital	Russell 2000	S&P 500	NASDAQ
1-year	-21%	-34%	-38%	-41%
5-year	6%	-10%	-19%	-21%
10-year	16%	18%	-26%	-27%

\*Ending 12/31/2008

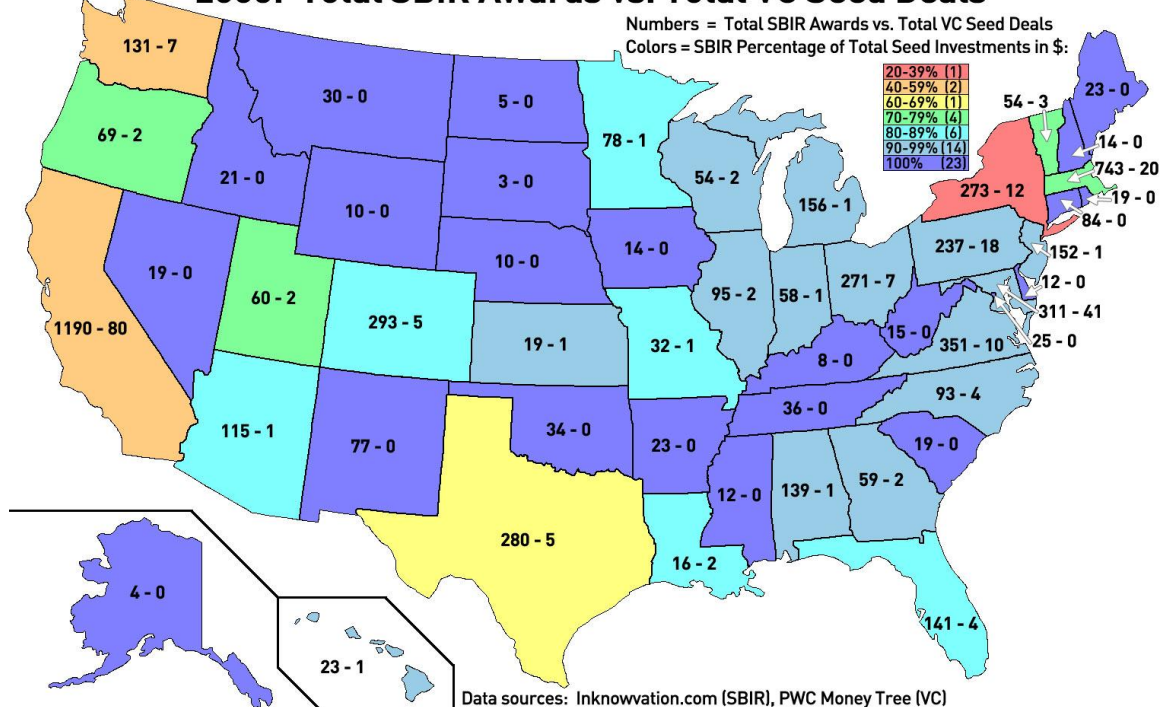
Source: National Venture Capital Association /Thomson Reuters, author calculations

According to the author of this report:

*“Note that this ten-year period includes the dot-com episode, thus materially inflating the venture industry’s trailing performance. (The combined value of venture-backed public offerings in 1999 and 2000 was more than the aggregate value in all other years between 1994 and 2008 inclusive.) According to Cambridge Associates data, the nine-year venture capital performance is negative, which means that ten-year venture performance will almost certainly turn negative at the end of this year when the bubble venture exits of 1999 are excluded. As a result, the venture industry’s current returns are already challenged and set to become considerably worse.”*

- (3) The VC industry is not very effective in the “seed” investment in the few million dollar amount appropriate for SBIR companies. **The map below shows how few VC “seed” investments are made across the United States in 2005 compared to the SBIR awards.**

## 2005: Total SBIR Awards vs. Total VC Seed Deals



(4) VC Managing Directors are highly compensated, as reported in the study **2006 VC Compensation**.<sup>18</sup> This study shows that the average 2006 total annual cash compensation for a Managing Director (the currently legally popular title for “Partner”) is about \$843,000 (base plus bonus), and the average value of their “Carry” (which is their compensation in their ownership) of the portfolio is \$9.5 million (taxed at Long-Term Capital Gains and conservatively stated by VCComp to be equal to a 2X return). For a typical 10-year fund, this means **the average annualized compensation (taxed at lower long-term capital gains rates) is \$1,793,000 per Managing Director. For the typical 10-year period this equates to a total average compensation of \$17.9 million.**

The SBTC does not see a value to the taxpayer to subsidize these wealthy individuals by effectively certifying them as “small businesses.”

### Summary and conclusions:

1. Two general conclusions flow from this.
  - (a) The overall design of the SBIR Program should not be changed. It’s working. As the recent series of NAS and GAO<sup>19</sup> studies concluded, SBIR is sound in design and effective in practice. The SBIR program has worked so well that large

wealthier companies and even non-profits are trying to join small business in the SBIR program.

- (b) The share of federal R&D going to small business should increase, and SBIR is the single best way to do it. The federal government addresses public needs. Absent an increase in the SBIR allocation, the federal government is in effect starving these public needs of the nation's largest pool of science and engineering talent – and its demonstrably best source of innovations.

Attachment 1: Correspondence from NIH Director, Harold Varmus, MD, August 1996, correcting misinformation provided by NIH staff to Congress and *Science Magazine*.

Attachment 2: SBTC Recommendations for the SBIR and STTR Programs.

---

<sup>1</sup> Small Business Innovation Research Program June 8 2009, SBA

<sup>2</sup> Fred Block and Matthew Keller, *Where Do Innovations Come From? Transformations in the U.S. National Innovation System 1970-2006*, Information Technology and Innovation Foundation, July 2008.

[http://www.itif.org/files/Where\\_do\\_innovations\\_come\\_from.pdf](http://www.itif.org/files/Where_do_innovations_come_from.pdf)

<sup>3</sup> National Science Foundation, *Science and Engineering Indicators*, 2007.

<sup>4</sup> SBA Office of Advocacy, from data provided by the U.S. Bureau of the Census, Statistics of U.S. Business. See: [http://www.sba.gov/advo/research/dyn\\_b\\_d8905.pdf](http://www.sba.gov/advo/research/dyn_b_d8905.pdf). This data series runs from 1989 and is currently available through 2005 only. The 2006 data will be available in the Fall.

<sup>5</sup> Source: Office of Advocacy, US Small Business Administration; See: [http://www.sba.gov/advo/research/dyn\\_b\\_d8905.pdf](http://www.sba.gov/advo/research/dyn_b_d8905.pdf) and *Small Business Profiles for the States and Territories*; published November 2008

<sup>6</sup> 1978 joint House and Senate Small Business Committee hearing on Federal R&D allocations to small businesses.

<sup>7</sup> [http://grants1.nih.gov/grants/funding/sbir\\_successes/sbir\\_successes.htm](http://grants1.nih.gov/grants/funding/sbir_successes/sbir_successes.htm)

<sup>8</sup> Dr. Harold Varmus letter to Jere Glover dated August 29, 1996, included as Attachment 1 to this testimony.

<sup>9</sup> An Assessment of the Small Business Innovation Research Program at the National Institutes of Health

<http://www.nap.edu/catalog/11964.html>

<sup>10</sup> Data from: (<http://report.nih.gov/nihdatabook/Charts/SlideGen.aspx?chartId=115&catId=13>) and

from the NIH Data Book, from NIH Research Portfolio Online Tool (RePORT) (<http://report.nih.gov/index.aspx>)

<sup>11</sup> From: An Assessment of the Small Business Innovation Research Program at the National Institutes of Health <http://www.nap.edu/catalog/11964.html>, page 83, Figure 4-1.

<sup>12</sup> Venture Funding and the NIH SBIR Program, NRC 2009

<sup>13</sup> Ibid.

<sup>14</sup> Yago, Glenn and Pankratz, Aaron, The Minority Business Challenge: Democratizing Capital For Emerging Domestic Markets (September 25, 2000). Available at <http://purl.access.gpo.gov/GPO/LPS6842>

<sup>15</sup> Brush, Candida, et al., An Investigation of Venture Capital in Women- and Minority-led Firms (January 2002). Available at: <http://www.sba.gov/advo/research/rs214.pdf>

<sup>16</sup> NASVF report, *Seed and Venture Capital, State Experiences and Options*, May 2006; [www.nasvf.org](http://www.nasvf.org).

<sup>17</sup> *RIGHT-SIZING THE U.S. VENTURE CAPITAL INDUSTRY*, Paul Kedrosky, Senior Fellow, Ewing Marion Kauffman Foundation, June 10, 2009, at: <http://www.kauffman.org/newsroom/venture-capital-industry-must-shrink-to-be-an-economic-force-kauffman-foundation-study-finds.aspx>

<sup>18</sup> From the web site: <http://www.vccomp.com/old/VCComp2006survey.pdf>

<sup>19</sup> *Federal Research: Assessment of Small Business Innovation Research Programs*, GAO Report RCED 89-39, January 23, 1989; *Federal Research: Small Business Innovation Research Program Shows Success But Could Be Strengthened*, GAO Report T-RCED 92-3, October 3, 1991; *Federal Research: Interim Report on the Small Business Innovation Research Program*, GAO Report 95-59, March 8, 1995; *Federal Research: Observations on the Small Business Innovation Research Program*, GAO Report RCED 98-32, April 17, 1998; *Small Business Innovation Research*, GAO report 06-565, April 2005; *Federal Research: Observations on the Small Business Innovation Research Program*, GAO Report GAO-05-861-T, June 28, 2005.