HEARING TESTIMONY

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ON BEHALF OF THE

BIOTECHNOLOGY INDUSTRY ORGANIZATION (BIO)

BEFORE THE HOUSE SMALL BUSINESS COMMITTEE

"INCREASING ACCESS TO CAPITAL FOR SMALL BUSINESSES"

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Good morning Chairwoman Velázquez, Ranking Member Graves, Members of the Committee, the Staff of the Committee, ladies and gentlemen. My name is Martin Sabarsky, and I am the Chief Financial Officer and Chief Operating Officer of HR BioPetroleum, Inc., a Hawaii-based biotechnology company focused on developing algae-based products such as next-generation biofuels. I am privileged to be here on behalf of the Biotechnology Industry Organization representing more than 1,200 member companies, academic institutions, state biotechnology centers and related organizations in all 50 states that are involved in healthcare, agricultural biotechnology, environmental biotechnology, and industrial biotechnology.

I am here to convey our support of the Small Business Early-Stage Investment Act of 2009, as it addresses a persistent problem in the biotechnology industry that has dramatically worsened in the past year. Over the past two decades, even in more "normal" financial times, the private equity and capital markets have increasingly failed to fund promising, early-stage scientific research beyond the basic research stage and before the revenue-generation stage, primarily because it is viewed as too high-risk relative to other investment opportunities. This critical phase of investment is often referred to as the "Valley of Death" within the biotechnology industry, given the potential for companies and technologies at this stage of their existence literally to die for lack of sufficient funding. This dynamic has been exacerbated greatly since the onset of the current financial crisis in the fall of 2008. Advancing science through the Valley of Death has never been more important than it is right now as we strive to create a 21st century economy, create new businesses and jobs, become more energy independent, transition to a low-carbon economy, and develop promising biotech treatments and therapies, all of which will benefit our citizens, and all of which will assist the United States in maintaining and even

enhancing its reputation as a world-leader in developing cutting-edge technologies and the premier place to start and expand business to do so.

As but one example of a company and technology within the emerging biofuels industry that has the potential to benefit from this important legislation, HR BioPetroleum's renewable energy technology utilizes the most productive plants on earth – marine microalgae – to produce feedstocks for biofuels and other valuable products. Our technology leverages the photosynthetic power and rapid growth characteristics of microalgae to convert sunlight and carbon dioxide from industrial sources into inexpensive oils for conversion into biofuels and proteins and sugars for other products such as animal feed. Studies have shown that successful development in America of biofuels such as cellulosic ethanol and biodiesel from algae could result in the equivalent of 7.9 million barrels of oil being produced per day by 2050 – virtually eliminating our need for gasoline. The widespread use of biofuels could also reduce greenhouse gas emissions by 1.7 billion tons per year, equal to more than 80% of transportation-related emissions in 2002. Providing incentives for investments in technologies such as ours is critical not only to developing new businesses and jobs but to meeting one of our nation's top priorities - increased energy independence and security.

The economic downturn that has now lasted over a year has been especially devastating to small biotechnology companies and their ability to raise the capital required to develop their science beyond proof-of-concept into technologies available to the public. A recent joint study by BIO and Thompson Reuters found that the economic downturn has forced over 80% of biotech investors to change their investment approaches. In fact, from September 2008 through July 2009, over 40 life science biotechnology companies have shelved promising drug development programs in a number of therapeutic areas, including Alzheimer's, Multiple Sclerosis, Avian Flu, diabetes and various cancers due to limited ability to raise capital funds. Despite the very significant amount of new federal dollars being put into the grant or loan guarantee pipeline by this Congress and the previous Congress, investments in clean technology companies, such as my own, were down 48% the first quarter of 2009 (New York Times; April 1, 2009) and saw another 9% decrease from the second to the third quarter (WSJ; October 2, 2009). The most recent figures released this past Monday by the National Venture Capital Association and Thompson Reuters show that venture capital funds raised during the third quarter of 2009 are at a 15-year low. (The Hill, October 12, 2009). In addition, within the nascent algae industry, of which HR BioPetroleum is a member, one company that previously was funded by venture capital firms, and whose scientific founder was featured last year in Time Magazine for their promising technology, had to close its doors due to the inability to raise additional capital from either their previous funders or from new funding sources in the private equity market. This dramatic decline of investment within the early-stage segment of the biotechnology industry in general, and the industrial biotechnology / clean technology industry in particular, jeopardizes America's competitive edge and risks delaying or deferring our ability to create a robust 21st global economy.

Part of the challenge in developing innovative new biotech technologies and products is that it is an extremely time and capital-intensive process. Even in a positive economic environment, many biotech discoveries languish in the labs due to the difficulty in raising capital for advancing early-stage research and development programs for which there is promising data but significant remaining technological and market risks. Development of biotech-based treatments and therapies takes, on average, 8 to 12 years to bring a product to market and costs between $800 million and $1.2 billion. The pre-commercial and commercial development of biofuel technologies is an equally capital and time-intensive process given the significant research and development, engineering, and construction and operational expenses involved in developing and deploying pilot-scale, demonstration-scale, and, ultimately, commercial-scale facilities that have acceptable economics and have been approved by all regulatory agencies. Pre-commercial development of algae-based biofuels processes is estimated to cost anywhere from $100 to $300 million, and commercial-scale deployment will require hundreds of millions of dollars to billions of dollars depending on the size of the facilities.

In the case of my company, HR BioPetroleum, by 2007 we had successfully demonstrated an efficient process to grow algae at industrial scale in a pilot plant on the Big Island of Hawaii. This attracted Royal Dutch Shell, a world leader in biofuels within the energy industry, and we entered into a significant, industry-leading joint venture, called Cellana. The main short-term goal of our Cellana joint venture is to build and operate a new algae production facility in Hawaii to demonstrate the economics of integrated algae production and algal oil extraction processes. The main mid- to long-term goal is to optimize this technology package to permit large-scale commercialization within the next 5 to 10 years. Based in part on the strength of my company's technologies and its validating joint venture with Shell, we signed a memorandum of understanding with Hawaiian Electric Co., Maui Electric Co., and Alexander & Baldwin for a commercial algae facility to be located on the island of Maui, next to the power plant located there. This commercial algae facility would represent one of the more significant investments in Hawaii and one of the most significant non-hotel employers on the island of Maui, should we successfully develop the technologies and obtain the required funding to construct and operate this facility. Despite these advantages and accomplishments, a private equity financing that was on the cusp of closing fell through shortly after the beginning of the current financial crisis in September 2008, when the private equity firm shifted its investment strategy in response to the financial crisis. Our subsequent attempts to attract additional venture capital / private equity investment to continue development in the midst of the continuing financial crisis have thus far failed, with several venture capital and private equity funding sources openly telling us that their investment model had shifted to a more risk-averse model of investing in only a subset of their existing portfolio company investments or investing in later-stage or even public companies. Among the firms we contacted, few were even open to considering new investments in firms like mine, or within the biofuels industry generally, or even within the broader biotech industry, given the perceived and actual technology risk, coupled with a general lack of availability of new sources of capital from the "traditional" sources of private equity funding, such as university

endowments and high-net-worth individuals and families. Even fewer firms we contacted in the fourth quarter of 2008 and the first quarter of 2009 engaged beyond preliminary discussions. At the moment, we have ceased reaching out to the venture capital / private equity community until signs of activity / interest can be seen. Our Cellana joint venture with Shell continues to operate, so as new positive developments occur with our commercial process development we can still potentially attract venture capital / private equity investment some time in the future. Most of our peers in the algae-based biofuels sector or the broader biotechnology industry, however, are not as fortunate as my company, and many have less than 12- or even 6-months of remaining cash to fund their programs or to survive as a company. Hence, this pending legislation is even more critical to addressing the inadequate funding environment that exists today and could persist for a significant time to come, and in particular could help early-stage, small biotechnology companies traverse the pernicious Valley of Death stages of their development.

Beyond the specific example of my company that I just shared with you, spurring investments in small, early-stage biotechnology companies will also spur job creation in the broader economy. In fact, a recent report by BIO Economic Research Associations (February, 2009) calculated that approximately 400,000 jobs would be directly created by the advanced biofuels industry, with total employment creation in the U.S. reaching 1.9 million jobs. They also estimated that direct economic output, including capital investment, research and development, technology royalties, processing operations, feedstock production and biofuels distribution, would be $5.5 billion in 2012, rising to $113 billion by 2030.

Traditional small business loans provided by the Small Business Administration simply do not work for early-stage biotechnology companies due to their high-risk nature, lengthy development times, large capital requirements for pre-commercial development, and aversion of equity investors towards early-stage companies with any significant debt. In many important respects, debt is just not a suitable or available source of capital for companies in the biotechnology industry, which traditionally have been financed entirely by equity capital until they have made it through the Valley of Death and are at a much later stage of development. The House Small Business Early-Stage Investment Act of 2009 would create a program at the SBA that would stimulate growth in small, early-stage, technology-based companies such as HR BioPetroleum These funds could also serve to bolster regional venture capital funds that are often key players in the early rounds of venture financing.

Other complementary programs, such as the loan guarantee programs, large grant programs, and tax incentives available through agencies such as the Department of Energy and Department of Agriculture are important adjuncts to the pending legislation, but these programs are simply not available to small businesses in the biotechnology or biofuel arenas that don't already have the sufficient equity capital to satisfy the cost-share requirements or the minimum equity requirements that must be demonstrated in the application phase of these programs. It is a sad reality that, unless the biofuels-related grant and loan guarantee programs are modified to reflect the lack of significant new funding within the biofuels industry, only those large, diversified

companies with excess cash reserves or small companies who already have been funded can even apply for the significant federal dollars that are becoming available through the recent stimulus bill or other federal programs. In many cases, as I believe is the case with my company, HR BioPetroleum, small businesses that require new or additional equity investors to pursue DOE grants or loan guarantees may have the more innovative technologies despite their current lack of capital. This is a real Gordian Knot that can only be cut by providing additional equity capital to address this problem.

In closing, it is clear to me, as I hope it is clear to the Committee and this Congress, that small, early-stage biotechnology companies have enormous potential to benefit the economy, improve public health, and increase our nation's energy independence and security, among other significant benefits. To ensure that the United States remains the world leader in biotechnology research and development, investment in these biotechnology companies needs to be fostered. BIO believes that providing incentives for additional investment in small biotechnology companies is the most effective approach for SBA to support these high-risk, high-reward companies. This will provide a mechanism for SBA to address the needs of small, early-stage biotechnology companies that have heretofore been largely unable to utilize SBA's finance programs or the other funding mechanisms within the federal government.

Thank you for the opportunity to talk to you about HR BioPetroleum and the promise of advanced biofuels as well as how programs such as the Small Business Early-Stage Investment Act of 2009 could serve to provide incentives for increasing the availability of much needed investment dollars required to develop commercially available biotechnology products and processes that will benefit the public.