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Executive Summary  
**Israel's Life Science Industry:  
Barriers to Growth**

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## About the Milken Innovation Center Fellows Program

The Milken Innovation Center Fellows Program accelerates Israel's economic growth through innovative, market-based solutions for long-term economic, social, and environmental challenges. Our goal is to accelerate Israel's transition from a Start-up Nation to a Global Nation with solutions that others can replicate.

The Program awards annual fellowships to outstanding Israeli graduate students. We train and deploy some of Israel's best and brightest young professionals to create pragmatic financing and economic policy solutions. Our applied research and Financial Innovations Labs® are a launching pad for transformative change, using innovative financing mechanisms, programs and policies to bridge social, regional, economic and productivity gaps within Israel and between Israel and the world.

In addition, Fellows craft their own projects during their internship aimed at barriers to job creation and capital formation in Israel. The Fellows' research, carried out under the guidance of an experienced academic and professional staff, support business and policy makers to shape economic reality in Israel. The program offers the ultimate training opportunity, combining real-life work experience with applied research.

Throughout the year, Fellows receive intensive training in economic and financial analysis, public policy and research methods. They acquire tools for communication and presentation, policy analysis, leadership and project management. The fellows participate in a weekly research training workshop where they work with senior economic and government professionals, business leaders, and top academic and financial practitioners from Israel and abroad. They also participate in an accredited MBA course, taught at the Hebrew University School of Business Administration by Prof. Glenn Yago.

Fellows Program alumni can be found in senior positions in the public and private sectors. Some serve in key positions in government ministries while others work at private-sector companies or go on to advanced graduates studies at leading universities in Israel, the United States and Great Britain.

The Fellows Program is a non-partisan. It is funded, in part, by the Milken Institute and other leading philanthropic organizations and individuals in the United States and Israel.

Israel has a thriving bio-science environment, reflected in high patents per capita and biomedical discoveries that are the foundation of global blockbuster drugs. However, the local industry, largely based upon these scientific innovations, suffers from not realizing its economic and technology potential. This research investigates capital structure limitations and related obstacles faced by life science start-ups in Israel, and suggests innovative financial models to overcome these gaps and allow the industry to reach its potential.

Based on investment data and interviews with industry experts, this research identified the following barriers in the biomedical technology industry: the “valley of death” in late pre-clinical stages is defined by a small number of capital suppliers and small investment rounds. In late clinical stages, there is a shortage of new capital investors, and existing investors have difficulty forming syndicates to achieve scale. In addition, throughout these stages of business development, limited investment activity has led to few strategic investors with domain expertise and experience. Additionally, the lack of local subcontractors for activities such as trials and testing management leads to expensive services abroad. In the medical devices field, rising regulatory demands and late exits lead to higher development costs, lower adjusted returns, and longer holding periods, all of which deter potential investors. In fact, several Israeli venture capital companies with some expertise in medical devices closed down in recent years, and the result is both higher demand for capital, and lower supply during the critical clinical stages.

In order to address these barriers, this research explored two innovative financial models for investment in life sciences in Israel. For early-stage funding gaps in bio-pharma, a scalable version of large capital investment investment fund, called a Megafund, could be implemented. This model was developed by Stein, Lo and Fernandez. The Megafund model could hold a diverse portfolio of compounds/biopharma solutions, often in overlooked market niches, is larger than a typical venture capital funds, and could be able to raise both equity and long-term debt. This model both attracts new funding to invest in life sciences and enables to these investors to place large sums of money in early stages. For later-stage funding gaps, a Royalty Stream Investment model can be developed. In this model, the investor purchases equity shares in a future royalty stream of a start-up company, usually after regulatory approval. Thus, the start-up company can channel the future royalty returns to invest right away in the development of other products in its pipeline. Since royalty returns may be very large in scale, it can be used for late clinical stages and support independent growth. In order to leverage foreign investors in these models, investment tax credits and limited guarantee may need to be deployed directly or through a special purpose investment facility.

The results from each of these two models would be not only more investment capital that would be available at strategic points in the development cycle for biomedical companies, but smarter capital that can leverage new business opportunities in new, under-served life science markets.



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