WHITE PAPER

VENTURE MODELS CAN ACCELERATE CURES

BUT AREN'T FOR THE FAINT OF HEART

Three foundations are succeeding by tailoring innovative funding models to their disease.

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THE HBS KRAFT ACCELERATOR LEADERSHIP FORUM

Disease-focused foundations have tremendous passion to develop cures for their diseases. But securing adequate funding to drive the development of treatments and cures is incredibly difficult. In the current climate, nonprofits face enormous challenges just supporting their basic operations; funding the development of treatments is even more difficult.

As part of the HBS Kraft Accelerator Leadership Forum—where we regularly bring together leaders of innovative disease foundations to share insights and best practices—we have heard from CEOs of game-changing nonprofits that have developed innovative funding models to drive new treatments and cures, and are having success even in the current environment.

Profiled below are unique funding models developed by: 1) JDRF's T1D Fund; T1D is a relatively common disease that has no FDA-approved disease-modifying therapies; 2) EBRP (Epidermolysis Bullosa Research Partnership); EB is a rare disease with no treatments; and 3) the Multiple Myeloma Research Foundation (the MMRF); multiple myeloma is a midsize disease with more than a dozen FDA-approved treatments.

A common theme from these leaders is "there is no one-size-fits-all" funding model for producing treatments. In addition to an organization's leadership and strategy, **the right funding model for a foundation to drive development of treatments and cures is tailored to the disease** and depends on factors such as: 1) as the number of people with the disease; and 2) the scientific maturity of the disease ecosystem. The scientific maturity can encompass several factors, such as the genetic knowledge about a disease, the progress in translating the science to the clinic, the robustness of the development pipeline, the number of clinical trials, and the number of FDA-approved treatments that are commercially available.

JDRF

JDRF T1D Fund

Type 1 diabetes (T1D) is the fourth largest autoimmune disease in the United States, affecting about 1.6 million patients, and approximately 20 million patients globally. However, as of 2016, there were zero disease-modifying therapies for T1D and very little investment capital was devoted to cure therapies in this disease, which relies on symptomatic treatments through lifetime insulin delivery and management.

Based on these market dynamics, JDRF, the world's leader in T1D research, created the T1D Fund, a high-impact venture philanthropy fund with a narrow and relentless focus on T1D and a goal of catalyzing the venture capital community to investment in curing T1D.

As the T1D Fund's Chairman, Sean Doherty, explained, "Our model is premised on leveraging venture capital. I believe if you have really smart people with a lot of capital and an economic incentive, and you show them a good idea, good things will come from it."

The T1D Fund is managed by a full-time staff of experienced life sciences investment professionals, with unmatched T1D focus and expertise, and with access to a global scientific network of T1D experts through JDRF and the Helmsley Charitable Trust.

As shown below, to date, the T1D Fund has raised and invested about $70 million—which has attracted almost $400 million in private investment, mainly from life sciences venture capital firms. Since inception, private investors, investing alongside the T1D fund, have provided leverage of almost 6X.

Market Dynamics (as of 2016)

- Large market, with 1.6M patients in US
- Strong scientific knowledge of type 1 diabetes
- Low market maturity, with 0 approved therapies, as science has not been translated into commercially available treatments

Funding strategy: Catalyze the VC Community

The T1D Fund's initial investments have already returned about $46 million, which is being recycled and reinvested. Also, importantly, the fund has attracted alongside investments from around 30 venture capital firms, 20 of which had never previously made an investment in type 1 diabetes.

By educating VCs about the opportunity in T1D and by attracting VCs to invest alongside the T1D Fund, it is the hope of the leaders at the JDRF and the T1D Fund that life sciences venture capitalists will continue to see this space as an attractive opportunity and will invest significant capital in T1D for years to come. Ultimately, the success of several of these companies should lead to the billions of dollars of pharmaceutical company investment that will be required for cure therapies in T1D.

T1D's Investment focus	# of investments	$ from T1D Fund	$ by private investors	VC leverage
Immune therapies	10	$32M	$174M	5.4X
Beta cell therapies	9	$18M	$183M	10.2X
Improving lives	7	$16M	$34M	2.1X
Total	26	$66M	$391M	5.9X

EB RESEARCH PARTNERSHIP

EB Research Partnership (EBRP)

Epidermolysis Bullosa (EB) is a group of devastating and life-threatening skin disorders that affect children from birth. EB is a rare disease that affects from 25,000 – 50,000 people[1] in the US. There are no treatments for EB.

Based on these market dynamics, EBRP began with a venture philanthropy model to fund academic research, and based on experience, EBRP's model has evolved over time to a model focused on forming new companies and then consolidating these companies into a holding company.

EBRP's funding model has evolved over time through four stages, as shown below.

Stage 1: Academic. With no treatments and little research on EB, EBRP undertook venture philanthropy. EBRP would fund relevant research at a university or would put together consortiums from across universities. To monetize this work, EBRP—as the leading funder (and the "800-pound gorilla in the space")—required a royalty share and/or rights to any IP generated. Per EBRP co-founder and chairman, Alex Silver, "This was effective in that it secured a seat at the table when the IP moved from commercial to academic settings."

Also, these research efforts advanced the scientific knowledge and understanding of EB at the molecular and genetic levels, creating momentum around EB and leading to the evolution of EBRP's model.

Stage 2: Private/Public Biotech & Pharma. EBRP wanted to see the results of the research commercialized. To accelerate commercialization, EBRP started funding private and public companies. This involved an array of structures, such as taking restricted stock, guaranteed ROI of investment, etc. EBRP's goal was to figure out what the other party needed most, not be the most expensive cost of capital, and provide incentives for success. This stage yielded some positive outcomes, such as a $500,000 investment which produced a 6X ROI in three years.

Market Dynamics

- Very small market, with 25,000-50,000 patients in the US
- Early but rapidly growing scientific knowledge
- Low market maturity, with 0 approved therapies

Funding strategy: Form Companies to cure EB

Stage 3: New Company Formation. EBRP evolved further by no longer just investing in existing companies but forming brand new companies. This has included working with entrepreneurs to establish new companies or lifting out pieces of existing companies to form a new company – for example creating Wings Therapeutics by lifting it out of ProQR. These companies tend to be focused on single therapies for EB. A number of companies are showing promise.

Stage 4: Holding Company (Merger). Knowing that early-stage biotech companies will need far more capital as they move into clinical trials, EBRP has decided to create a holding company to house all of its companies and other rare derm and inflammatory condition therapies. This holding company, which has one permanent management team, intends to raise up to meaningful amounts of capital from institutional investors. EBRP owns 20% of this holding company at formation.

In addition to pursuing EB therapies, the holding company will focus on "derm," which is unique in that there are few derm-focused companies and there may be significant derivative or adjacent opportunities in derm—such as cosmetic applications—with commercial potential. As Silver said, "Our goal is to de-risk research by bringing capital to this rare derm company with multiple shots on goal. This enables us to accelerate EB sand other treatments." This strategy of taking multiple focused shots on goal along with exploring adjacent opportunities is a model that could apply to other rare diseases.

[1] https://med.stanford.edu/dermatology/resources/gsdc/eb_clinic/eb-faqs.html#:~:text=severely%20affected%20individuals)-,How%20common%20is%20EB%3F,the%20United%20States%20have%20EB

MULTIPLE MYELOMA Research Foundation

The Multiple Myeloma Research Foundation (MMRF)

Multiple myeloma is a type of blood cancer that affects plasma cells. About 35,000 people in the US are diagnosed with multiple myeloma each year. There are 15 approved treatments for multiple myeloma; however, these treatments are not cures. Research continues in areas such as immunotherapies, which could be curative.

The MMRF's model varies based on the stage of the company in need of assistance.

For early-stage companies, particularly those in the immunotherapy space, the MMRF has created the Myeloma Investment Fund (MIF), which is a venture philanthropy fund that makes equity investments.

MYELOMA INVESTMENT FUND
CAPITAL FOR CURES

But the MMRF provides these companies with far more than just funding. The MMRF leverages its assets to add value by offering deep scientific expertise, extensive patient data, access to the MMRF's biobank and clinical network, and access to patients. The MMRF's CEO, Mike Andreini, said, "Most companies partner with us for the expertise and access to data, not solely because of the funding. There will always be larger institutional investors that have deeper wallets than ours if they just need money."

Market Dynamics (as of 2016)

- Mid-sized market, affecting more than 130,000 people in the US
- More scientifically mature, with extensive scientific knowledge, data, trials
- Somewhat mature market with 15 approved therapies, but no cures; the disease is still fatal

Funding strategy: Leverage data and expertise alongside investment

With larger, later-stage companies, especially big pharma companies, the MMRF is leveraging its unique data assets to generate millions of dollars in revenue from industry through multi-year subscriptions. These companies, which don't need funding from the MMRF, see great value in the MMRF's data—including its industry-leading registry of multiple myeloma patients—and its scientific and clinical expertise. Access to this data and the MMRF's expertise can help these companies be smarter about their clinical development activities and their commercial strategy. Partnering with the MMRF is viewed by these companies as a worthwhile investment.

For the MMRF, revenues generated from industry subscriptions helps offset part of the significant investments the MMRF has made in research, registries, datasets, a clinical network, and expert staff. However, it is important for the MMRF to balance the funding received from industry with funding from philanthropy to maintain its position as a credible, unbiased third party.

KEY TAKEAWAYS

Important themes arising when discussing the funding models of innovative disease-focused organizations include:

1. **This is not for amateurs.** There are organizations who hear about the idea of venture philanthropy and rush to create a fund. But it's not so easy. Each of the three models discussed was led by seasoned professionals with a high level of financial sophistication and with high motivation, since they or someone they love was affected by the disease. Knowledgeable, sophisticated, motivated leaders are critical to create a funding model to accelerate treatments and cures in a material way.
2. **There is no one-size-fits-all approach; the fund strategy will vary based on the disease.** Each of these models is different and is tailored to the situation of the specific disease. T1D is focused on a big market with no treatments; the strategy is to catalyze venture capital. EBRP is focused on a rare disease with no treatments; the strategy is to fund companies, raise institutional capital in the derm space, and look for adjacent opportunities. The MMRF is a mid-sized market with 15 treatments; the strategy is to leverage data and expertise to pursue new types of cures.

   For any disease, it is important to understand the size and scientific maturity of the market and develop a strategy that is appropriate for that market.
3. **Identifying the right opportunities and partners is critical.** For the T1D Fund, the right partners are life sciences VCs who become educated about the attractive opportunities in T1D. For EBRP, the right partners were initially academic institutions and evolved to become entrepreneurs and scientists focused on specific EB treatments; the opportunity was to found companies, raise significant capital for a neglected area (derm), pursue cosmetic applications, and create an innovative model for rare diseases. For the MMRF, the opportunity is to leverage the organization's valuable data and unique expertise.
4. **Be attuned to issues between the parent organization and the fund.** Every foundation will have to make a decision about whether a fund or funding model is part of the organization or is a separate entity. There will invariably be tensions that must be navigated between the "mother ship" and a separate funding arm related to legal, financial, governance, and resource allocation issues.
5. **Be attuned to potential PR issues.** While the idea of venture philanthropy is far from new, invariably situations will still arise when someone raises questions or criticizes a nonprofit fund for investing in a for-profit company.

While complicated and not for all organizations, these examples show that with outstanding leaders and innovative models, disease-focused organizations can lead the way in driving the development of treatments and cures for their disease.