A conversation with Susan Desmond-Hellmann on April 18, 2014

Participants

- Susan Desmond-Hellmann, Chancellor, University of California, San Francisco
- Cari Tuna — Co-Founder, Good Ventures
- Holden Karnofsky — Co-Founder, GiveWell

Note: These notes give an overview of the points made by Dr. Desmond-Hellmann in the conversation.

Summary

At the time of the conversation, Dr. Desmond-Hellmann was the Chancellor of the University of California, San Francisco and the incoming Chief Executive Officer of the Bill and Melinda Gates Foundation.

Holden and Cari spoke to Dr. Desmond-Hellmann about promising philanthropic opportunities related to life sciences research.

Goals for the Bill and Melinda Gates Foundation (BMGF)

BMGF's strategies are thoughtful and metrics-driven.

As Chief Executive Officer, Dr. Desmond-Hellmann hopes to:

- Magnify impact, particularly by improving the overall capacity of health systems, civic society, and other important institutions.
- Improve BMGF's work environment.
- Improve BMGF's ability to partner with others.

Dr. Desmond-Hellmann has emphasized transparency during her time at UCSF, and hopes to do the same at BMGF.

Basic research in life sciences

When Dr. Desmond-Hellmann moved from academia to industry, her ability to focus on her work (rather than on e.g. securing funding) improved greatly. The industry side of life sciences research is highly meritocratic and results-based, while the academic side has a harder time fostering this dynamic.

The NIH faces a large number of applicants for a relatively small number of grants. Its current methods for selecting recipients have difficulty ensuring fairness and reliable support for good scientists. In addition, these methods are likely biased toward

incremental and established research over higher-risk, higher-reward research. It is particularly difficult for young researchers to secure adequate funding.

Dr. Desmond-Hellmann is a Trustee of Howard Hughes Medical Institute (HHMI). She admires HHMI's basic approach of betting primarily on people rather than projects, and considers HHMI to be a role model for funding basic research. She thinks that it is likely more productive to take this sort of approach, when supporting basic research, than to focus on working toward progress particular diseases and conditions.

The traditional academic system has produced incredible accomplishments. Structural reforms may be called for, but working toward those reforms would likely require a very long time horizon. In the meantime, a lot of progress can be made by working outside of traditional funding mechanisms, as HHMI does. Increasing the amount of funding available for work such as HHMI's could have significant impact. The California Institute for Quantitative Biosciences represents another excellent approach to funding and supporting life sciences.

Applied and translational research

To the extent there is a "valley of death" between academic and industry research, it's unlikely to be primarily due to a lack of funding. Rather, good translation between these domains involves many technical and logistical challenges.

There could be a great deal of promise in improving data collection. This could include (a) giving private individuals opportunities and incentives to monitor and share data on their health. It could also involve (b) finding better ways to collect and analyze all of the information generated in clinical trials.

An example of (a) is the Glow mobile app, which allows people to record data about their health and analyze it for applications including trying to conceive. Glow also introduced a form of "insurance" in which people could pay into a risk pool to cover fertility treatment in the event that it was needed. By providing these useful functions, Glow has likely collected a great deal of user data that could be of use to scientists if the appropriate data sharing partnerships could be worked out.

Regarding (b), there is significant promise in "reverse translation": learning more about biology by studying unexpected phenomena in late-stage research (e.g., clinical trials). For example, side effects observed in Herceptin clinical trials led to a better understanding of the role of the Her2 receptor in heart function. Pharmaceutical companies often have incentives to downplay (rather than highlighting) side effects, so it can be difficult to take advantage of these sorts of opportunities to gain new knowledge.

Immunotherapy for cancer is considered a promising area, and there will be many clinical trials of therapies that target the immune system. Good "reverse translation" efforts could take advantage of these trials to gain knowledge about the functioning of the human immune system, which could lead to progress on understanding autoimmune diseases

such as scleroderma and lupus. Jeff Bluestone would be a good person to speak with on this topic.

Other opportunities to work toward improved translation:

- It is possible for funding to be the bottleneck to translational success. This was likely the case for prostate cancer prior to Michael Milken's involvement. It used to be that there were very few people working on prostate cancer, and it was difficult to have a career in this area. Mr. Milken changed this by providing significant funding. There may be comparable areas today. Chronic pain treatment may be one.
- Methodological research, aimed at e.g. bringing down the cost of clinical trials or finding new ways to generate evidence on safety and efficacy, could be very fruitful.
- Safety concerns can be a major bottleneck to progress. In some ways, it is a better bet (from a profit perspective) to develop a treatment for a rare disease than to develop a treatment for a very common condition such as diabetes, because the safety threshold for the latter is so high.
- There may be benefit in increasing interaction between researchers and clinicians.

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