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CC: Sunny Balwani; Heather King; Bill.Foege@[REDACTED]
Subject: FW: Friday meeting
Attachments: Theranos review notes.docx

FYI from Bill, who we were privileged to have there for the review session last Friday.

Elizabeth

From: Bill Foege (Independent Contractor) [mailto:Bill.Foege@[REDACTED]]
Sent: Tuesday, March 01, 2016 6:28 AM
To: Elizabeth Holmes <eholmes@theranos.com>
Subject: Friday meeting

Elizabeth, I appreciate the report David has done. Here are the notes I made of the meeting. If they are accurate and you want to share them with Board members, feel free to do that. I didn't want to do that on my own, but thought it might give them confidence that the science is being questioned, examined, and reaffirmed..

I thought it was a great day!! Thanks, Bill

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Theranos notes

Feb. 26, 2016

The meeting provided an opportunity for Elizabeth to explain the Theranos program to outside scientists with an interest and expertise in the clinical lab testing field. The group included Dr. David Helfet, Director of Orthopedic Trauma surgery at Cornell, Dr. Stanley Hamilton, Head of the Division of Pathology and Laboratory Medicine at MD Anderson Cancer Center, Dr. Steven Spitalnik, head of laboratory services at Columbia University, and Dr. Andy Miller, Infectious Disease specialist at Cornell. Dr. Thomas Kickler, Director of Hematology and Coagulation labs at Johns Hopkins was on by WebEx. Some expressed their skepticism of the Theranos approach, at the beginning of the meeting, and most seemed to have detailed information on the newspaper reports of Theranos.

Elizabeth reviewed the studies on the nanotainer, what is known about capillary versus venous determinations, the analytic methods used and their results, representative studies comparing different items measured by both approaches etc. She took many questions and there was a robust discussion of the procedures, test results and the meaning of those results. Elizabeth made the point that Theranos is not a finger stick company but rather a small sample company. Many of the 300 plus tests involve samples other than blood.

By means of slides and video she showed the equipment and how it worked and later the group inspected the actual machines and some had finger-stick tests done.

The attitude of the group changed perceptibly during the day. Soon they said they had seen enough of the analytical methods and capillary versus venous results so that we could go to other things. They were amazed at the closeness of fit for results from capillary versus venous sources.

Soon the tenor of the conversation turned towards what more they would like to see (whole system models rather than what can be done with each test), how and where to convey the results and what they could do to be helpful. I spent time in the car with Steven Spitalnik before and after the meeting and the contrast was significant. From a true skeptic to excitement over this being a possible game changing approach.

The conclusions I drew from the meeting included:

1. The amazing detail of the presentations, the high quality of the studies and the assays. The professionalism and quality of the staff and the fact that the Theranos team has identified and perfected so many parts of the program over the years. These were basically academics accustomed to working in an academic environment and they clearly had great respect for the Theranos staff.
2. They suggested an important consideration that would not have entered my thinking. Usually with science, a finding is not accepted until confirmed by an independent group. That is part of the protection in science. It becomes self-correcting. Theranos is developing protocols that hopefully aren't copied soon by others. They suggest the equivalent of a "chain of custody" approach where an independent person or persons verifies each step. This could be similar to a notarized system where the person does not have to have access to the proprietary aspects but verifies the steps that were taken.
3. The group felt that publication was essential. The papers would indicate what was done but would not contain proprietary information. Again they made a suggestion that I would not have entertained but became convinced was useful. I would have approached this with a paper in the New England Journal or JAMA, plus an article in Science. They suggested publishing in *Clinical Chemistry*. This is not a journal I read but they said the people that need to be convinced are the laboratory directors and they all read that journal. It is likely that publication could be facilitated within months. That would be a good start with other publications in other journals to follow.
4. They suggested ignoring the newspaper response entirely. Let the science community handle the disputes. And they suggested articles on

what the full menu would look like. What needs to be done to change the system?

- 5. They confirmed the most important targets as pediatric medicine, cancer care and situations where repeat blood samples are required.**
- 6. The group suggested some areas for consideration, such as routine samples in surgical situations.**

It is clear what can happen in a small group presentation to change minds and attitudes. But it is a retail approach and the wholesale approach now involves publications, presentations at meetings and the incorporation of more laboratory leaders into providing advice, which in turn requires that they become familiar with what Theranos is doing.

Bill Foege 2/28/2016