From: Lesley Groff <[redacted]>
To: Jeffrey Epstein <[redacted]>
Subject: Joe Thakuria?
Date: Wed, 18 Dec 2013 12:44:24 +0000

Did I need to do anything with Joe Thakuria?

Sent from my iPhone

Begin forwarded message:

From: Joseph Thakuria <[redacted]>
Date: December 12, 2013, 3:43:49 PM EST
To: Lesley Groff <[redacted]>
Subject: Re: Jeffrey Epstein-Invoice?

Hi Lesley,

Sorry I've been swamped with clinical work. We don't have a fellow this month so I've been in the hospital until late every day this week.

Realistically I won't be able to provide a detailed invoice until early next week but here's the general update:

1. I don't think donating sequencing of patient genomes or exomes will be an option anymore. I think it will be too difficult to clear by mgh. And all the patients I had in mind were seen through mgh. I'll let you know if this situation changes.

2. For whole genome sequencing in a clia lab, I think the best bet is to get this done directly through Illumina. The cost for this is $5-10k but I'll run various options by him. They offer just the raw data as well as 2 types of analyses. I think he should do all 3 but I'll include more details in the invoice. (I'm still discussing with people from illumina and waiting for some calls back.)

3. In terms of analysis, since Jeffrey has said cost is not an issue, the best route in my opinion would be to analyze across several of the genomic analyses tools currently available. Though it's not critical to analyze across multiple tools, it's a new enough field that a) they each have their own pros/cons, b) I don't think the illumina analyses (both options) provides enough features for in depth analyses (this might seem surprising - but shouldn't be - since they're much more focused on their sequencing instrumentation business over analyses tools), and c) comparing results across the different ones for concordance is worthwhile. I've honed in on 2-4 I think are worth using and will tally up the costs in the invoice.

4. Individualized cell lines: Jeffrey already has fibroblast cell lines from the skin biopsy done for the pgp. Induced pluripotent stem cells (adult stem cells) can be made from these. They can also be induced to differentiate into various cell types including neurons (which would otherwise, of course, be difficult to obtain and study in a specific individual). I'm getting itemized costs but getting to iPS cells costs around $10k and the process takes about 6 months (because of the multiple cell passages needed in the protocol). (Success of course isn't guaranteed either.)

All this work should fall within or just a bit over the $30k or so Jeffrey mentioned over the phone. Payment can be made by your group directly to the various vendors once you have that info. As I discussed with Jeffrey on the phone, I won't personally accept money and any effort I contribute to this will be pro bono. And, this goes

without saying, but with respect to the vendors, these are just suggestions so Jeffrey should feel free to use other vendors if he has other preferences.

I'm happy to go through his genome pro bono using the analyses tools his genomic data from illumina will get loaded onto once it's available. I'm also happy to reassess as well in a year to try and incorporate any new data that may be available relevant to his genome. At that time, there may also be additional data to generate and analyze from studying his iPS or other cell lines. On that front, it may also be interesting to do a genome on his fibroblast cells (which we currently have unlike the iPS cells). I wouldn't expect to get additional medical info from that but it helps give a handle on mutations that are present in the fibros and not him - and later in the iPS cells but not native cells. (And, therefore, give you a handle on how accurately these cells will reflect normal physiology when further studied.) At some point we can compare his white blood cell genome to fibroblast cells to iPS cells and other derived cells.

Some of this hassle, such as needing multiple vendors for sequencing and analyses, just comes with the territory of being an early adopter. This will get cheaper and the process should be more straightforward over time. And while no one can guarantee benefit from genome sequencing, especially in someone relatively healthy, there is the possibility of reaping benefit as an early adopter before others if something medically actionable is discovered in his data. (We'll also concentrate our analyses on those 56 genes the ACMG recommended checking even in healthy individuals).

More to follow and apologies for the delay on the invoice. You can see I've been looking into it though and there are still a few moving pieces. [redacted] sorry about the news on funding patient sequences. Jeffrey sounded excited about that possibility. His genomic data should be interesting though and even if it's of limited use now, he'll be able to go back and reanalyze the data in the future as more is collectively learned in this field.

Best,

Joe

On Dec 11, 2013 5:23 PM, "Lesley Groff" <[redacted]> wrote:

> Hi Joe…can you please give me the ETA for Jeffrey's invoice? I'm sorry to keep pestering you, but Jeffrey has asked that I stay on top of this…it is quite important to him.
>
> Any update would be tremendously helpful.
>
> Thank you,
> Lesley
> Assistant to Jeffrey Epstein
> [redacted]