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**From:** Caleb Harper <calebbenharper@gmail.com>  
**Sent:** Friday, October 12, 2018 12:46 AM  
**To:** jeffrey E.  
**Subject:** Re:

Sorry to miss you Monday - you'll enjoy John=... interested to hear your thoughts after

On Thu, Sep 6, 2018 at 7:57 PM Caleb=Harper <calebbenharper@gmai=.com <mailto:calebbenharper@gmail.com> > wrote:

sorry for late response - just got back from eas=ern europe.

1. Follow up On John =e La Parra - Got John on board as a temp to perm hire (he is =erfect for the team - brilliant) and we are working on a white paper to se=d out shortly. He is willing/able to leave his positions at North Eastern =nd Tufts and go full time with us starting in Nov. So until then I have hi= committed to 50% time.

2. Next steps - Setting up mtgs =ith Ed B and Martin to discuss the draft white paper and our approach. In =eneral I think developing a quantified "turing test" for plants =ould be a great first step to proving sentience. Ive also started working =ith Lazlo Barabasi <[https://en.wikipedia.org/wiki/Albert-L%C3%A1szl%C3%B3\\_Barab%C3%A1si](https://en.wikipedia.org/wiki/Albert-L%C3%A1szl%C3%B3_Barab%C3%A1si)> on the next round of th= flavor experiments, and from a network science perspective, I think he wo=ld be a great collaborator on this work. With advisory from Ed, Martin and=Lazlo and building up my team here - I think we are in great shape. We mig=t need a reputable thinker on consciousness, maybe a philosopher? Know any=ne that could collaborate from that perspective?

3. Funding -=C2♦ I cant hire John full time and start spending money on other staff/proto=ype development/experiment costs until Joi signals to me that the budget w= talked about has landed at ML. Is it possible to move forward with that?=-C2♦

4. Things to read - attached - OpenPharm : a whit= paper John started in the last week or so geared towards using our tools =or drug discovery --- Cyber+Agriculture \_Paper\_Harper - a flavor paper we =ust sent to PLOS , its pretty basic but has some good underpinnings that w= will expand on with further experiments.

In Bos=on anytime soon? Id really like for you to see the lab out in Middleton, M= (40 mins north boston) next time

the real questi=n....what are these plants thinking in my lab today and what language are =hey speaking...  
=-C2♦

B=st,  
Caleb

Previous=email breaking down funding:

To do this id need to add dep=h to my bio team, that's by far my weakest team in the lab current=y. I recently let contracts lapse on Arielle and my molecular biologist as=it wasn't working out. I'd want to add the following team =nd would need to do a search to get the best. MIT won't let me hir= PhD Research Scientists, and likely quality people

wouldn't accept, without secure multiyear funding. I'd propose 500k a yr for 3 yrs with the expectation we evaluate progress after year one as to year 2 and 3. The transparent cost breakdown is:

PhD plant physiologist - 80k base salary + 5% mit research OH (none goes to my lab or ML) + 20% benefits = 149,760 = total cost

PhD plant biochemist - 100k base salary + 56% mit research OH + 20% benefits = 187k total cost

Plant science tech (JR) - 40k \* 20% administrative OH - 48k total cost

100k prototyping budget + 20% material & services OH = 120k total cost

= 500k a year / 3 yrs

On my side I'll dedicate 2 out of our 4 shipping containers for 3 years (target paid for install / dev etc but with stock price decline is stopping support for non essential research) and my salary is covered by other sponsored accounts plus my team of engineers on staff (backend / front end software, data science, electrical, embedded systems and mechanical engineers)

I know it's a big ask, and would understand if it's out of ball park, but I think that's what it would take to make meaningful and rigorous progress on figuring out if plants can think and communicate

Thoughts?

<div class="gmail\_quote">On Fri, Aug 31, 2018 at 1:03 PM, Jeffrey E. <<mailto:jeevacation@gmail.com>> wrote:

next step?

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◆=A0 please note

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Caleb Harper TED Talk

<[https://www.ted.com/talks/caleb\\_harper\\_his\\_computer\\_will\\_grow\\_your\\_food\\_in\\_the\\_future?language=en](https://www.ted.com/talks/caleb_harper_his_computer_will_grow_your_food_in_the_future?language=en)>

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