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| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Backers,  We're sorry to say that we have reached a significant transition point. We were planning to start shipping the fragrant moss two weeks ago, but this has been delayed due to contamination in our production strain. As you know from previous updates our plan was to use the revenues from the moss to fund the ongoing glowing plant research, so the delay has caused financial stresses. As a consequence we’ve had to reduce the size of the team to ensure we have enough financial runway to ship the moss, and this has meant stopping the work we were doing on higher plants to focus on the moss.  We know this is a disappointing outcome for everyone, and nobody feels this more than we do after putting everything we have into the project over the last four years. We’ve done everything we could to keep this research going but it doesn’t look like that was enough.  As we indicated in our last update we are working on glowing moss, and hope to keep that work going. The priority now though is shipping our fragrant moss as we won’t be able to deliver glowing moss without delivering that first and we have a responsibility to our equity investors to bring revenue in as soon as possible.  **Fragrant moss**  With regards the fragrant moss, the delay was caused by contamination of the moss we have in production. Somehow, for reasons we haven't been able to ascertain, some cells still have a herbicide resistance gene which means we can't ship this batch. We expect to fix this issue but it’s going to take time to regrow the moss back to full volume once we do.  We have finalised the design of the moss, we’ll be shipping it with a circular glass terrarium and growing it on white rocks. We are branding it ‘Orbella’ and it looks like this:  Orbella Fragrant Moss  We have also designed the packaging for the moss. We’ve managed to make virtually all the packaging from compostable materials, so it will have zero waste, including protection for the glass provided by a mushroom grown material in partnership with Ecovative, it looks like this (we haven't printed the boxes yet):  Orbella Moss Packaging  Since discovering the contamination issue we've also been working to improve the growth rate of the moss so that we can scale production faster than we did before. This has meant moving to a liquid growth system as shown here:  [Prototype moss liquid culture](https://emails.kickstarter.com/mpss/c/1AA/6TYCAA/t.26l/NgIxbB0NQcOdSrUgO8Boww/h3/f3dvl2VcGsEZ6J6Qez85dZELuNkgtrZOjYZGYXOnkA0-3D" \t "_blank)  [This system is working well, and we've gone from the moss biomass tripling in two weeks to a 5x growth in one week - an 8 fold improvement in growth rate. Our revised shipping date is now July.](https://emails.kickstarter.com/mpss/c/1AA/6TYCAA/t.26l/NgIxbB0NQcOdSrUgO8Boww/h3/f3dvl2VcGsEZ6J6Qez85dZELuNkgtrZOjYZGYXOnkA0-3D" \t "_blank)  **FAQ:**  What about refunds?  As we’ve indicated in a previous update we have spent way more than the kickstarter funds on the project so we cannot offer refunds. Instead we'll offer credits of your kickstarter pledge towards buying the moss and planter once those ship.  What about physical rewards, eg vases?  Those are mostly in storage in our basement, however we don’t have the funds for shipping and fulfilment.  We hope to ship them once we have revenues from the moss sales.  What about the book?  This might still happen, depending on finding time beyond the work on the moss, but if it happens it will be more focused on the human elements behind the project, going through YC as one of their first biotechs and the challenges of failing so publicly. The priority for now though is shipping the moss.  What is the status of the maker kit?  This is still shipping in beta. Nobody has managed to successfully transform the plant at home with it yet however so we’ve still been making changes to the kit design. We will ship this to those interested in trying to debug it at home. If you want to try the kit, the first step is to get a permit from USDA which you can do by following the instructions in this file: [Dropbox Link.](https://emails.kickstarter.com/mpss/c/1AA/6TYCAA/t.26l/NgIxbB0NQcOdSrUgO8Boww/h4/y1c0Fer5pNfRtNHToOre4Tl30iY08zj75I-2FQwxj6cdzGwB-2FyObZMhenTfHB4LgUnmZ-2FlSGeJOxlt1UPXWOXpCkDE8R-2B7RhYhLp6gXM8FAtw-3D" \t "_blank)  What are next steps for the project?  We still believe in the long-term potential of this project. The imperative to move the world towards a lower carbon and non-renewable resource footprint is as strong as ever. Synthetic biology and it's ability to enhance natural, renewable process remains a strong candidate to deliver that cleaner future. Unfortunately, we almost certainly launched this project many years too early with too many technical issues to overcome. Progress in the field over the last four years has been substantial: DNA synthesis has fallen from around $0.25 to $0.08 a base pair, cloud based robotic labs have become available and CRISPR has made fine edits routinely possible (which among other things will mean accelerated understanding of gene function).  One of the most frustrating things about where this has ended up is that we never got to get all six genes into a plant. It's still unclear whether this is caused by toxicity of the genes or challenges with getting such a large construct inserted correctly. Our primary hypothesis is the latter so we are hoping someone else would be interested in carrying on the attempts to insert the genes. If you are interested in taking the DNA we've made and working on transformations yourself please get in touch at [antony@glowingplant.com](mailto:antony@glowingplant.com" \t "_blank) so we can send it to you - hopefully someone else can build on what we've done and figure out the remaining steps.  **Conclusion**  This has been an undeniably challenging journey, filled with the kind of highs and lows that you only get when you have the privilege to work on something that's impactful and meaningful. It wouldn't have been possible without your tremendous support and enthusiasm funding this campaign.  Thank you also for the many messages of support - both online and privately - as we've gone through this process, that support kept us going despite the challenges we faced. I'm sorry that we've let you down on delivering the Glowing Plant. I hope though that despite that failure the project can still leave a positive legacy in inspiring people to learn more about synthetic biology and its benefits - and hopefully one day someone does finally make a Glowing Plant.  Yours,  The Glowing Plant Team | | | |