

Save the trees. Play facebook games.

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Fraxinus Gamers to join ash dieback fight-back

Next time you sit next to someone on the train playing a game on their smartphone don't be too dismissive. They may be harnessing the most state of the art genomics technology in the fight to save Northern Europe's woodlands from destruction. We are obviously not talking about Candy Crush, but a new and addictive Facebook puzzle game called "[Fraxinus](#)", developed by scientists from [The Sainsbury Laboratory](#) in Norwich and the gaming company [Team Cooper](#). The game uses real genetic data from the fungus that is causing the devastating [ash dieback disease](#), and from the common ash tree that this disease is wiping out across Europe.

Readers of this blog will have seen our [previous postings](#) on this project, as earlier in their year we published their "[power to jah people](#)" call to arms paper, appealing for people to join in the crowdsourcing effort. Since our [involvement in the crowdsourcing](#) of the genome of the 2011 German *E. coli* outbreak, we've been fascinated in any of these projects that utilise the hive mind of the internet for distributed problem-solving, particularly in tackling rapidly evolving disease outbreaks, and are keen to promote anything that helps advance this new way of carrying out data intensive science.

Game of Clones

By playing Fraxinus, members of the public will help provide clues about the diversity of the [ash dieback fungus](#), how it causes such devastating disease and what makes some trees naturally less susceptible.

It involves matching and rearranging patterns of coloured leaf shapes which represent nucleotides. People are better at these types of tasks than computers alone, because the human eye can recognise patterns that computers miss.

"Each play of the game will contribute a small but useful analysis," said Dan MacLean from The Sainsbury Laboratory who conceived the idea.

"The more people who play it, the more accurate the results will be for us and the quicker we can generate the information needed to help our woodlands recover from the current epidemic."

The Chalara and ash tree genomes consist of about 60 million and one billion letters respectively. All the puzzles in the game feature likely trouble spots that the scientists would like investigated to help break down the data. The size of the task makes the contribution of non-specialists invaluable.

"Computer power alone is not the answer to making the most of our data," said Dan.

"An awful lot of human expertise and knowledge has to be poured on top and with this game we can start to include the non-specialist."

Utilizing a human-based computation technique known as "[Games With A Purpose](#)", these types of entertaining outsourcing ideas have been utilized before to solve biological problems in the games [Foldit](#) (for solving biochemical structures) and [Genegames](#) (studying human disease

genes). This example takes it onto the Facebook platform for the first time, to take advantage and help it spread over the players existing social networks. When people talk about the "viral spread" of trends and games on the internet, it was never thought these may be harnessed to tackle the spread of real disease outbreaks, but this is what is being attempted here.

The game also goes further than others by allowing players to compete directly over datasets, so puzzles (or patterns as they are called in the game), can be owned by a player and then stolen by other players if they can improve the score. This not only brings competition in, but means the get additional pairs of eyes looking at the same datasets, making the resulting data more accurate.

Fraxinus is aimed at a non-specialist audience, and this can have its benefits as the creators of Foldit found that the gamers without a biochemistry background can often be better at solving molecular structures as they'd come to it with no preconceptions and biases. Making sure that the game is interesting and playable to the usual gamer audience, it has been tested with school kids.

"It's good it's based on a real problem," said Lucy Cann, a pupil from Wymondham College who helped test the game.

"It's addictive and with this game it's towards something."

As a further incentive to take part, players Facebook names will be featured next to any useful results they produce in the [OpenAshDB repository](#), and Dan says they are keen to investigate with journals if they could even be acknowledged and credited in any resulting publications. Foldit for example have listed the ["Foldit Void Crushers Group" as authors](#) on some of their papers, when individual gamers wanted to share the credit with the rest of the gaming community.

The sequence data are generated by [TGAC](#) and [Genepool](#) at the University of Edinburgh for research into ash dieback led by the John Innes Centre. Results of this research project are already being made immediately and freely available on the [OpenAshDB repository](#) at an impressive rate, with data from the disease resistant "tree 35" [released almost immediately after production](#).

The Facebook game is part of a rapid response to [ask dieback](#) funded by the [BBSRC](#), which includes understanding more about the disease, how it attacks ash trees, finding natural resistance and predicting and mitigating disease progression. It also fits nicely with the BBSRC's plans ([and £2M of funding](#)) to encourage and develop crowdsourcing approaches to complex, large-scale scientific problems.

You can see the press release [here](#), and read more about [The Sainsbury Laboratory](#), the [John Innes Centre](#), [TGAC](#) and [Team Cooper](#) from the links embedded here. Get playing at: <http://apps.facebook.com/fraxinusgame/>

References

1. MacLean, D; et al., Crowdsourcing genomic analyses of ash and ash dieback — power to the people. *GigaScience* 2013, **2**:2 <https://doi.org/10.1186/2047-217X-2-2>

UPDATE: since this release this morning the BBSRC has issued a [press release](#) and published a video (see below) and the OpenAshDB team have been featured on [BBC News](#) and the Radio4 Today program.

The post [Save the trees. Play facebook games.](#) appeared first on [GigaBlog](#).