QUESTION	ASKER NAME	ANSWER(S)
how come the blight does not kill the roots	Russel Boyer	Hey Russel - We aren't entirely certain exactly what the mechanism is, but there are likely other organisms in soil which are antagonistic to chestnut blight. there's also likely an aspect of either anaerobic or some other abiotic aspect of soil that the fungus doesn't like. Regardless, the roots persist because of the soil, or something in the soil, that the blight fungus doesn't like. There's a procedure called a "soil compress" or "mudpack" which can also be used to kill the fungus on an individual canker on a tree, further showcasing how the fungus can be killed - or at least have growth arrested - because of soil.
Has anyone researched if any fungal mycelium went extinct as a result of the functionally extinct status of the American Chestnut? doesn't the fungus also thrive in Oaks?	Thomas Levesque	live answered Hi Thomas - there are still millions of American chestnuts in the landscape on which the chestnut blight persists. "functionally" extinct just means the tree doesn't perform its functions in the ecosystem as it should. but the blight never went extinct - and never will - because there are so many sprouts and Chinese chestnuts on which the fungal organism will forever persist. The blight fungus can survive, but not thrive, on oaks and a handful of other species. The blight does not often fruit on other hosts. Chestnut is the preferred host and where the blight is happiest.
I came across what seems to be a miracle cure. Apparently, the blight fungus kills the tree by producing oxalic acid. A simple gene addition of a wheat gene which destroys oxalic acid was added to a chestnut genome and the resulting trees are much more resistant. Sorry I don't have a reference. I was hoping my brother could attend (PhD biochemistry professor at LSU) could attend but he couldn't.	Michael Moroney	Hi Michael -- Jared will be discussing this genetic addition during his presentation. Sorry sent early, I was typing this in in advance somehow posted it early.
okay	Russel Boyer	live answered

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QUESTION	ASKER NAME	ANSWER(S)
Sara, I was thinking of all the beneficial soil mycelium that was fed by decomposing chestnut leaves; I thought of this because a previous speaker on this forum explained that some pond organisms like frogs seemed to do better with the GE chestnut leaves being included int he pond than without, which begs the question did any beneficial soil mycelium go extinct as a result of the American Chestnut's severely reduced presence in our eastern forests?	Thomas Levesque	Hi Tom -- ahhh - good question! Sorry for the mis-understanding. I don't know if we know the answer to that question....
Maybe I don't understand genetics. However, I have read chestnuts have a lot of genetic variation. If we map the genome are we capturing all this variation or do have just one snapshot of many variations? If only have one variation how can we generalize to all the genetic variants?	frank	live answered
Why caused the cost of sequencing to drop so rapidly in 2007?	Henry McNab	live answered
Can a specific part of the DNA be copied out to produce many different proteins, or is each part of the DNA specific to one and only one protein?	Rod/Maggie Walker	live answered
Who/Where are the active centers doing Chestnut Genomics work?	Schmalzel, John L.	live answered
Do we understand this well enough that we could in theory create novel (artificial) DNAs and novel proteins? Aka biological machines?	Rod/Maggie Walker	live answered
was this presentation recorded and where available	John	Yes - it is being recorded and will be available in about a week here: https://acf.org/resources/chestnut-chat-series/

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QUESTION	ASKER NAME	ANSWER(S)
Do I understand correctly that so far, we (SUNY) can only create the one tree with the wheat gene because we cannot control where the wheat gene is placed in the DNA?	Rod/Maggie Walker	Hi Rod and Maggie - only one tree can be transformed at any given time. One can transform any American chestnut but, as you note, once you do that transformation, you can't guarantee where the gene goes, how many copies it gets, and/or how much product the gene creates. So, while it's possible to do many transformations, it's very expensive and doesn't give a standardized product.
Where do we stand with getting federal approval to actually use or release the wheat enhanced genome into the wild?	Rod/Maggie Walker	Hi Rod and Maggie - the public comment period for the Notice of Intent (NOI) finished up last month. Within that NOI, the USDA noted that they would have an Environmental Impact Assessment (EAS) within 2 years from now, subject to the USDA also asking for an extension. So, probably 2 years from now, but that's still a guess. we have no hard information or timescale from the regulatory agencies.
are there no wild Chinese chestnuts which are larger and more similar to American chestnut? I was asking that they may be better mother trees for mostly American crossbreeds than smaller orchard trees so the hybrids will be more American like	Michael Moroney	Hi Michael - there are wild Chinese chestnut which are large and similar, most especially Castanea henryi. That said, that's only with regard to growth and form, not other ecological characteristics. the nuts are still different sizes, which impacts wildlife edibility, and the leaves are vastly different which significantly impacts insect herbivory. Another major difference with, for example, Castanea henryi, is that it's not as cold tolerant as American chestnut. So, there are certainly individuals which are more timber-type or form, but they still wouldn't fit the ecological niche or services that American chestnut did here.
The blight spread throughout the range of the chestnut with virtually 100% impact. Is the Phytophthora going to do the same?	Rod/Maggie Walker	Hi Rod and Maggie - It's certainly possible. That said, Phytophthora cinnamomi doesn't like all the soils and environments where American chestnut can grow. So, I would not expect it to be 100% coverage, but it will surely, eventually, impact a large majority of the native range, and probably beyond.
Chestnut blight occurs on oaks and I think scarlet oak especially. However, the oaks are mostly resistance. Are we mapping the genome of oaks to see why they are resistant? The oaks never saw blight before it came but have high resistance. The chestnuts went belly up. What do the oaks have in their genome that make them	frank	Hi Frank - I don't know if we have time to address this in the Chat. As I understand it, these aren't necessarily resistance mechanisms in oak, but rather that the fungal organism doesn't recognize it as a host. Those types of mechanisms aren't likely to be utilized or transferable. That said, it was the whole premise behind the Fagaceae project which happened 10 or so years ago. TACF isn't mapping the oaks, but they are being sequenced and we might be able to find similar resistance mechanisms or

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QUESTION	ASKER NAME	ANSWER(S)
essentially resistant while chestnuts have little resistant? Oaks and chestnut are related.		pathways, but it's unlikely that the exact pathways will be conserved between the two genera.
Can I rub dirt (wet soil) on to my American Chestnut trees to help prevent blight? Which I think you suggested this may work from a question above. Does the dirt need to stay on the tree? So, would I have to apply dirt at intervals? I am trying to keep my chestnuts alive longer to have mother plants live longer for interacting with the Darling 58?	John Caruso	A mud pack can be applied to a blight canker as a way of treating it. This technique is for treating cankers and not something to use prophylactically. You can find a good article with instructions in our fall 2019 issue of Chestnut: https://acf.org/wp-content/uploads/2020/12/FINAL_Chestnut_Fall2019.pdf
It is one thing to change the DNA in one cell, but do you get CRISPR to change all the cells in the plant? Or for some reason do we only need to change one or a few cells?	Rod/Maggie Walker	live answered
When you alter a gene...how many samples do you actually change, and how do you insert them back into the tree...do you do it in seed and then plant that seed/ or how?	Robert Fisher	Hi Robert - Jared just went over the pipeline, but the genetic changes are made to embryos and then have to be grown up into plants.
Jared, what evidence do we have that LSA trees have actually survived a blight infection. Also, are there still 'wild' type Chinese trees in Asia. If so, how do they differ from commercial cultivars? Thanks	Douglas McLane	live answered
I have been reading of a DNA modified tree that is waiting for USDA approval before marketing. Is that the Darling tree?	Anonymous Attendee	Yes. The Darling 58 chestnut is the chestnut tree awaiting regulatory approval from the USDA and other federal agencies.
Any interest in searching for genes that are related to tall growth habit and inserting them into Chinese tree? (Might be easier - maybe the "tall growth" genome is simpler?	Mike Aucott	live answered

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QUESTION	ASKER NAME	ANSWER(S)
Thinking of "SETI" and similar crowd-based distributed efforts, do you think there are opportunities for similar contributions from individuals? Analysis w/ personal computers? Something done w/ small greenhouses?	Schmalzel, John L.	live answered
Search for Extraterrestrial Intelligence	Schmalzel, John L.	live answered
Please say something about the "Small Greenhouse" distributed effort possibilities	Schmalzel, John L.	Live answered

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