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DivSeek founder offers patent rights on climate change genes to Syngenta and DuPont in exchange for $400,000

by Edward Hammond

Records released under Freedom of Information laws reveal that DivSeek founder Loren Rieseberg, a geneticist at the University of British Columbia (Canada), has offered gene giants DuPont and Syngenta access to unpublished research results, gene sequences and patent rights to climate change genes identified by his DivSeek-affiliated project.

In return for privileged access to sequences and patenting opportunities relevant to both sunflower and soya (soybean), Rieseberg wants the seed giants to provide $400,000 for his research project. The genes being offered confer potentially valuable traits for breeders working to adapt crops to a changing climate, such as drought resistance and heat tolerance.

DivSeek has also received funding to attempt to write the policy rulebook on access to genetic sequence data in agriculture. Rieseberg's project, which is mainly funded by Genome Canada, includes the work of his employee Emily Marden, who is charged with "devis[ing] a governance mechanism for sharing plant genomic resources" and to influence the Convention on Biological Diversity (CBD) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) in ways that support Canada's interest.

Also revealed here is recently released documentation of DuPont's effort to get inside DivSeek with the help of University of Georgia professor Scott Jackson, who also considers himself to be a DivSeek founder.

These revelations further call into question the "pure" science and apolitical pretences of the controversial project, which aims to coordinate projects to deep-sequence hundreds of thousands of crop seed genomes and to place the resulting sequence data into interoperable databases. They also call into question statements made to civil society by DivSeek's representatives, particularly the Global Crop Diversity Trust.

TWN THIRD WORLD NETWORK is a network of groups and individuals involved in bringing about a greater articulation of the needs, aspirations and rights of the people in the Third World and in promoting a fair distribution of world resources and forms of development which are humane and are in harmony with nature.

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Industry offered patents on DivSeek sequences

An accomplished geneticist, Rieseberg pitched his DivSeek sunflower and soya genomics project to seed giants DuPont and Syngenta in July 2015, offering patent rights and privileged access in return for about $400,000. He wrote to representatives of both companies stating that "collaborators will have early access to information and germplasm from the project. In addition, there maybe [sic] opportunities to obtain patent protection on resistance alleles that have been modified to enhance efficacy".[1]

To the pitch, Rieseberg attached his funded Genome Canada project proposal, drawing the companies' attention to a passage on intellectual property and to how synthetic biology can be used to strengthen proprietary claims. The passage reads in relevant part: "While legal protection of natural allelic variants, such as those identified by the project, is weak, if such variants are modified using gene editing to enhance trait efficacy, then strong patent protection becomes possible. Indeed, Rieseberg's lab is collaborating with a major seed company to patent modified natural variants underlying a valuable crop protection trait. A similar strategy is likely to be employed here…"[2]

DuPont quickly replied to Rieseberg's proposal. Instead of funding, the company offered "in kind" research on Rieseberg's germplasm – introgression lines combining wild and cultivated sunflowers – at its facility in Seville, Spain.[3] Rieseberg told colleagues that he was inclined to accept DuPont's offer, and for it to effectively replace the University of California's role in Rieseberg's project.[4]

This would make DuPont not the first but the fifth company to sign on to the DivSeek founder's project. With encouragement from Genome Canada, Rieseberg had already garnered support from KWS Seeds, Advanta, Biogemma and Nuseed Americas.[5]

DuPont has eagerly sought an opportunity to get inside DivSeek. Gregory May, the company's Senior Research Manager, has sought greater DuPont involvement in DivSeek through Scott Jackson, a University of Georgia geneticist. Jackson, like Rieseberg, describes himself as a founder of DivSeek.[6] In early 2015, May wrote Jackson that companies "would certainly be in a position to contribute as much or more than most of the current [DivSeek] partners", adding, "not to mention the cash that could … come DivSeek's way".[7]

Jackson told May that he supports bringing companies into DivSeek, but not necessarily as data (i.e., gene sequence) providers, since some DivSeek partners wanted DivSeek to be "much like GenBank – everything available" – and feared corporate data would have access restrictions.

Instead, Jackson suggested DuPont could involve itself in DivSeek in other ways (i.e., as funder and data user). Jackson suggested that May lobby the Global Crop Diversity Trust in order for DuPont to secure a place inside DivSeek.[8]

DivSeek's very political genomics governance plans

Meanwhile, the same Genome Canada grant that supports Rieseberg's applied sunflower and soya project includes money for Rieseberg's employee, Emily Marden, to pursue activities as the Chair of DivSeek's unusual "governance committee", including development of policy proposals for how to govern access and use of genetic sequence data.

DivSeek's "governance committee" uses several different names and is only generously described as a "committee". Records released to date show that it actually operates as an extension of its two full-fledged members, Marden and Peter Phillips, a professor at the University of Saskatchewan. Two others in Canada are members, but both of them are graduate students.

Peter Bretting of the United States Department of Agriculture (USDA) is a fifth member, but e-mails released under the US Freedom of Information Act reveal that Bretting is not closely involved. In August 2015 Bretting asked Marden to expand the committee's membership, noting its narrow geographic base, but Marden replied that her attempt to recruit additional members was unsuccessful.[9]

Genome Canada's support to Marden falls under its "GE 3 LS" programme, which addresses "Genomics and its Ethical, Environmental, Economic, Legal, and Social Aspects". In this case, the GE 3 LS grant is not social or environmental science so much as funding for lobbying aimed at implementing DivSeek's preferred alternatives for (non-) governance of access to genomic data, including influencing international treaties in this regard, specifically the ITPGRFA and the CBD.[10]

A key premise of Genome Canada's funding is that "there are multiple layers of ambiguity arising from [the ITPGRFA] and its application that may hamper innovation", and that these ambiguities can be advantageously interpreted. Among the ambiguities listed is the scope of the ITPGRFA Standard Material Transfer Agreement, the Treaty's obligations regarding gene sequences, whether or not gene edited plants are covered, and how combinations of Treaty and non-Treaty seeds are treated.

Marden's job under the grant is to "identify areas where the legal frameworks are ambiguous and areas where there are opportunities to interpret the frameworks in a beneficial manner [for Canadian interests]". Marden is further tasked "to bring the identified issues into broader policy discussions with the aim of facilitating further innovation in agricultural genomics". That is, by using her position in DivSeek and lobbying the ITPGRFA Secretariat, push forward Canadian agribusiness-friendly interpretations of alleged Treaty ambiguities.

According to the grant, Marden will "devise a governance mechanism for sharing plant genomic resources that respects certain proprietary interests but facilitates innovation". The grant claims that, because she is Chair of the previously described DivSeek governance committee, "This position gives Marden a role at the center of determining how agricultural genomics data will be shared going forward."[11]

Whether or not DivSeek is ultimately at the centre of any policy questions for gene sequence data remains to be seen. The full text of the Genome Canada-funded research project, as well as Rieseberg's written pitch to Syngenta and DuPont, are posted online to accompany this paper (see URL below).

Is the Global Crop Diversity Trust confused? Or worse?

The Global Crop Diversity Trust is a coordinator of DivSeek, and Crop Trust staff have done a large proportion of the organizing work to get DivSeek started.

According to DivSeek steering committee records, the Crop Trust opposes DivSeek engagement with ITPGRFA policymakers, who have asked DivSeek for a report, because the Crop Trust allegedly considers such engagement to be too political.[12]

Yet the Chair of DivSeek's governance committee is operating under a grant that expressly calls for her to develop governance proposals for genomic data and to use her position to lobby the ITPGRFA and CBD. Also, as has been previously noted, DivSeek is considering a proposal for an invitation-only policy seminar to develop and advocate positions on genetic sequence data policy issues.[13]

The Crop Trust should not continue to pretend that DivSeek does not aim to engage in policymaking and lobbying. Even more disturbing, the Crop Trust does not appear to be on the right side of truth when it comes to

characterizing DivSeek's relationships with the private sector either.

In March 2016, the Crop Trust met with some civil society organizations (CSOs) at its headquarters in Bonn, Germany. At the meeting, the Crop Trust claimed that DivSeek has not sought or received any private sector funding – a claim that, at best, might be called obfuscation.

Others involved in DivSeek since the beginning privately note that discussions with Syngenta about funding for DivSeek began before the project was publicly announced. Documents previously released have described the DivSeek steering committee's interest in a Syngenta-proposed funding scheme, as well as efforts by Marden to recruit deeper corporate involvement in the project.[14]

In this paper, it is revealed that DivSeek's founder is offering patent rights to climate genes to DuPont and Syngenta. It is also revealed that a principal DivSeek scientist is supporting DuPont's bid to get inside the project.

The Crop Trust should explain why the written record on both DivSeek's involvement in policy issues and questions of seed company funding are not consistent with statements made by its staff.

Conclusion

In this third paper reporting the results of open records requests to US and Canadian institutions, it is further confirmed that DivSeek cannot continue to deny that it is working to shape international policy on access to genetic sequence data in its own interests, and can no longer pretend to be a "pure science" enterprise without significant ties to industry.

The Global Crop Diversity Trust in particular needs to explain why its portrayal of DivSeek to biodiversity policymakers and CSOs is so starkly at odds with the written record. Or risk serious damage to its credibility.

The newly released records also serve to further underscore the need for CBD and ITPGRFA Parties and policymakers to act quickly to close the growing gap between physical and digital access to genetic resources. Sequences generated by projects like Rieseberg's can be shared and patented without material (seeds) changing hands, potentially enabling avoidance of access and benefit-sharing obligations.

A key opportunity to begin this work in earnest will come in December 2016, when the Conference of the Parties to the CBD, meeting in Cancun, Mexico, can request that the implications of genome sequencing in combination with gene editing be considered by the CBD's Ad Hoc Technical Expert Group on Synthetic Biology.

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This paper was written in May 2016. Records obtained under the open records laws that are referenced here may be viewed at: http://www.pricklyresearch.com/AutoIndex/index.php?dir=digitalgenebanking/. In due course, the full set of DivSeek documents obtained under US and Canadian open records requests will be posted at the above URL.

Endnotes

1. Rieseberg L (2015). Pioneer Syngenta Proposed Collaboration. Document sent via e-mail to officials at DuPont and Syngenta. 17 July. Obtained under the Georgia Open Records Act.

2. Rieseberg L and J Burke (2015). Genomics of Abiotic Stress Resistance in Wild and Cultivated Sunflowers. Grant Proposal to Genome Canada. Obtained from the University of Georgia under Georgia Open Records Act requests #16-029 and #16-013.

3. Streit L (2015). E-mail to Loren Rieseberg. 5 October. Streit is Soy and Oilseeds Platform Director for DuPont Pioneer. Obtained under the Georgia Open Records Act. Syngenta's reply to Rieseberg's proposal has not been included in records released to date.

4. Rieseberg L (2015). E-mail to John Burke (University of Georgia). 6 October. Obtained under the Georgia Open Records Act.

5. Rieseberg L and J Burke (2015).

6. While the origins of DivSeek are unclear, by Jackson's reckoning, it is him, Rieseberg, Susan McCouch (Cornell University) and Hannes Dempewolf (Global Crop Diversity Trust) who began the initiative. Dempewolf is a former student of Rieseberg's. (Jackson S (2014). E-mail to JS Angle, H Scherm and RN Shustad. 23 September. Obtained under the Georgia Open Records Act.)

7. Jackson S and G May (2015). E-mail exchange on DuPont involvement in DivSeek. 24 February. Obtained under the Georgia Open Records Act.

8. Ibid.

9. Marden E and P Bretting (2015). E-mails exchanged on DivSeek's "governance committee". 13 August. Obtained under the Freedom of Information Act.

10. Rieseberg L and J Burke (2015).

11. This and preceding quotes from Rieseberg L and J Burke (2015).

12. See Hammond E (2016). Digital genebankers plan to ignore UN request on the impact of genomics and synthetic biology on access and benefit sharing. TWN Briefing Paper No. 85.

13. See Hammond (2016).

14. See Hammond (2016).