A Press Release

How plants react to climate change

Dr. Exposito-Alonso receives Karl-Freudenberg-Prize

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Weinheim. April 14, 2020 The world climate is changing. Biologist Dr. Moises Exposito-Alonso examines if and how plants will adapt to this change in his dissertation "On climate change and genetic evolution in Arabidopsis thaliana". To predict how various populations of thale cress adapt to the consequences of global warming, he started an experiment with 500 different thale cress varieties with known genomes planted in Madrid (Spain) and Tübingen (Germany). One half of the plants received little rainfall while the other received enough. At the end of the experiment, the plants were dried and collected, and their fitness was evaluated based on the seed count using automatic image analyses. It helped create the first genome-wide map of climate-driven pressures for a species, which allowed predictions of genetic resilience of plant to future climate changes in Europe. The 30-year-old scientist is receiving the Karl Freudenberg Prize from the Freudenberg Group for his research work. The Prize is awarded annually by the Heidelberg Academy of Sciences (State Academy of Sciences of Baden-Württemberg).

"The latest scientific and research work acts as the basis for future technological innovations," says Dr. Luis Lorenzo, Head of Freudenberg Technology Innovation. "The Freudenberg Group as an innovative, global technology group supports young scientists like Exposito-Alonso, who are making an important contribution to improve our scientific understanding in different relevant areas." The prize holder is currently head

of a young scientist group at Carnegie Institution for Science's Department of Plant Biology based at Stanford University; in 2018, he wrote his doctorate at the Max Planck Institute for Developmental Biology in Tübingen, Germany. His work has been published in the renowned scientific journal, Nature. "I checked my email when I was drinking my coffee on a sunny California winter morning, and it said that I had won the prize and I thought: Wow! This is an important prize; I was not expecting it. I am very honored."

"I want to understand the natural world, to protect it, this is my motto," says Exposito-Alonso. "This project was my scientific dream." He worked on the project for four years. "At the time I read a lot of scientific literature and wrote computer programs to analyze biological data." In Madrid, he also needed to find a location where he could sow the plants; build rain reduction shelter on site, designed an irrigation system and recruit a team to sow hundreds of thousands of seeds at once. "I hope that these new findings will act as a data-informed and evolutionary-based foundation for understanding climate change and its impact on plants conservation," says the young scientist.

In celebration of the 100th birthday of Heidelberg Chemist Karl Johann Freudenberg, Freudenberg endowed the Karl Freudenberg Prize to sponsor young natural scientists in Baden-Württemberg. The prize is given for work in the natural sciences – particularly chemistry and biology. The prize is given every year and comes with a 10,000-euro award. Nominations and the comprehensive selection process are carried out by members of the mathematics and natural sciences class of the Heidelberg Academy of Sciences (State Academy of Sciences of Baden-Württemberg) as well as university professors and institute directors in Heidelberg.

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