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Report on DOE-Supported Participation in the 18th International Congress on Photosynthesis Research (IPC 2022)

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Conference Overview

The 18th International Congress on Photosynthesis Research (IPC 2022) was held from July 31 to August 5, 2022, at the Dunedin Conference Centre in Dunedin, New Zealand. The congress provided an international platform for researchers to share advancements in photosynthesis research, with an emphasis on its fundamental and applied aspects for energy and food security.

Key Details:

Conference Theme: Fundamental and Applied Science for Energy and Food Security

Satellite Meetings:

CO2 Uptake and Metabolism (July 28–31, 2022)

Water Oxidation Mechanisms (August 6–8, 2022)

Hybrid Format: In-person and online participation to accommodate researchers worldwide

Photosynthesis is the primary natural process that drives primary productivity within ecosystems, regulating energy fluxes and CO_2 uptake. Understanding these processes is essential for advancing alternative energy solutions, mitigating CO_2 emissions, and providing state-of-the-art scientific research directions. The 18th International Congress on Photosynthesis (IPC) facilitated this goal by bringing together scientists from around the world to exchange ideas and forge new collaborations, ultimately benefiting global and US scientific advancements.

Participation in this event strengthened US science by ensuring American researchers were actively involved in discussions on cutting-edge developments in photosynthesis research. The engagement of junior US scientists, made possible through financial support, helped cultivate the next generation of experts with career directions ranging from biophysics and molecular biology to sustainable agriculture, and CO_2 capture technologies—areas of strategic importance to US energy and environmental goals. The knowledge gained at the conference directly contributed to advancing DOE mission objectives by fostering innovation and collaboration that will shape future research directions in photosynthesis and bioenergy.

While senior scientists are generally able to secure funding for travel, many promising US graduate students and postdocs would have been unable to participate without this financial assistance. This congress provided them with a crucial opportunity to present their research, interact with global leaders in their fields, and establish professional networks that will benefit their careers and US research in the long term. For many, this

event was their first exposure to the international significance of their work, helping to integrate US scientists into the global research community in meaningful ways.

The diversity of topics and technical approaches presented at the congress created a highly stimulating multidisciplinary environment for both junior and senior scientists, all of whom are conducting research aligned with the US DOE mission. In collaboration with the executive members of the North American Photosynthesis Conference Association (NAPCA) and the International Society of Photosynthesis Research (ISPR), junior participants were selected competitively based on the quality of their submitted abstracts and application materials. Financial support consisted of waivers for the registration cost of the meeting and partial living expenses at local dormitory facilities at the conference site.

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The impact of this support was significant, increasing accessibility for early-career researchers who otherwise might not have attended. Participants actively engaged in poster sessions, symposia, and networking events, fostering new collaborations and contributing to the broader scientific dialogue in photosynthesis research. The DOE's investment in these junior scientists has helped strengthen their professional trajectories while ensuring US representation at this important international event. This funding played a crucial role in facilitating scientific exchange, knowledge dissemination, and career development, aligning with the DOE's mission to advance research in sustainable energy and CO2 capture.

The Department of Energy (DOE) provided $15,000 in funding to support the participation of graduate students and postdoctoral researchers from US institutions. Although COVID-related travel restrictions had largely been lifted, last-minute restrictions prevented as much participation as initially anticipated. Nonetheless, the meeting was highly successful, with most of the allocated funding disbursed, ensuring strong US representation and scientific exchange.

The breakdown of support is as follows:

Online Attendees (14 participants): Registration fee per person was $340, totaling $4,760.

In-Person Attendees (6 participants): Registration fees ranged from $550 to $1,295, with accommodation support provided at designated hotels, totaling $12,292.

The objectives of this support included:

Enhancing Career Development – Enabling junior scientists to present their research and engage with leaders in the field.

Fostering Collaboration – Encouraging interdisciplinary networking and collaboration among researchers.

Broadening Participation – Ensuring accessibility for early-career researchers who may otherwise be unable to attend due to financial constraints.

Knowledge Dissemination – Facilitating the exchange of ideas in photosynthesis research, particularly regarding DOE-relevant topics such as CO_2 fixation and energy capture

Impact and Outcomes

The DOE support had a significant impact on the junior US scientific community:

-Increased Accessibility: Many recipients indicated that without DOE funding, they would not have been able to attend.

-Scientific Engagement: Participants presented research in poster sessions and symposium discussions, gaining valuable feedback, and job networking.

-Networking and Collaborations: The event facilitated new collaborations between US-based and international researchers in photosynthesis and bioenergy research