



# The 7<sup>th</sup> ICDRA 2024

International Conference on Duckweed  
Research and Applications

12-16 November 2024

**HOST:** Kasetsart University &  
SATREPS, JICA, Japan



## 7<sup>th</sup> ICDRA 2024 Conference Program

<b>Venue:</b> Maruay Garden Hotel, Bangkok, Thailand	
<b>12 November 2024</b>	
13:30-15:00	<b>Excursion Ia:</b> Duckweed Holobiont Resource & Research Center (DHbRC), duckweed plant factory, duckweed reservoirs, Kasetsart University <a href="https://www.7icdra2024.com/?page_id=2424">https://www.7icdra2024.com/?page_id=2424</a>
16:30-18:00	<b>Registration</b> , Poster Hanging
18:00-18:10	<b>Opening address</b>
<b>Plenary Lecture:</b>	
18:10-18:50	<b>Duckweed for a better future</b> <i>Klaus-Juergen Appenroth</i> <i>Friedrich Schiller University, Germany</i>
18:50-21:00	<b>Cocktail reception</b> and <i>Wolffia</i> /products tasting
<b>13 November 2024</b>	
08:00-09:00	<b>Registration</b> , Poster Hanging
<b>SESSION I: Genomics &amp; Cell Biology</b>	
<b>Invited Lectures:</b>	
09:00-09:30	<b>Duckweed super-pangenome</b> <i>Todd P. Michael</i> <i>Salk Institute for Biological Studies, USA</i>
09:30-10:00	<b>The genomes and epigenomes of aquatic plants (Lemnaceae) promote triploid hybridization and clonal reproduction</b> <i>Rob Martienssen</i> <i>Cold Spring Harbor Laboratory, USA</i>
10:00-10:30	<b>Streamlined spatial and environmental expression signatures characterize the minimalist <i>Wolffia australiana</i></b> <i>Tom Denyer</i> <i>University of Tübingen, Germany</i>
10:30-10:50	<b>Coffee break</b>

<b>Oral presentation: Chair: Klaus-Juergen Appenroth</b>	
10:50-11:10	<b>Single nuclei sequencing of <i>Wolffia microscopica</i> reveals the minimal control of flower development in plants</b> <i>Shuqing Xu</i> <i>Johannes Gutenberg University Mainz, Germany</i>
11:10-11:30	<b>Resolving the duckweed frond with comparative transcriptomics</b> <i>Alexander Ware</i> <i>University of Nottingham, UK</i>
11:30-11:50	<b>Unraveling <i>Wolffia</i>'s potential for manned interplanetary space missions: growth and genetic responses to altered gravity</b> <i>Leone Ermes Romano</i> <i>University of Naples Federico II, Italy</i>
<b>SESSION II: Diversity/Ecology/Evolution</b>	
<b>Invited Lecture:</b>	
11:50-12:20	<b>Duckweeds as a model system for plant senescence</b> <i>Robert A. Laird</i> <i>University of Lethbridge, Canada</i>
<b>12:20-13:20 Lunch</b>	
<b>Invited Lecture:</b>	
13:20-13:50	<b>Keep it simple <i>Spirodela</i>: structural reduction in duckweeds</b> <i>Anthony Bishopp</i> <i>University of Nottingham, UK</i>
<b>Oral presentation: Chair: Robert A. Laird</b>	
13:50-14:10	<b>Experiments with neopolyploids unveil the ecological and evolutionary significance of polyploidy in duckweeds</b> <i>Quinten Bafort</i> <i>Ghent University, Belgium</i>
14:10-14:30	<b>So small, so similar, so different: investigating genetic diversity in duckweeds</b> <i>Laura Morello</i> <i>Institute of Agricultural Biology and Biotechnology, Italy</i>
14:30-14:50	<b>Molecular architecture of 5S ribosomal DNA loci in <i>Spirodela polyrrhiza</i>: novel insights into plant rDNA evolution and regulation</b> <i>Nikolai Borisjuk</i> <i>Institute of Cell Biology and Genetic Engineering, Ukraine</i>
14:50-15:10	<b>Hidden promiscuity explains duckweed diversity and evolution</b> <i>Ingo Schubert</i> <i>Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Germany</i>
15:10-15:30	<b>Duckweed evolution: from land back to water</b> <i>Hai Zhao</i> <i>Chengdu Institute of Biology, Chinese Academy of Sciences, China</i>
15:30-15:50	<b>Genetic and morphological variation among populations of duckweed species from Thailand</b> <i>Athita Senayai</i> <i>Kasetsart University, Thailand</i>
15:50-17:00	<b>Coffee break/Poster session I* (Odd No., see the page of the abstract book)</b>
16:30-17:00	ISCDRA business meeting

17:00-18:30	<b>Excursion Ib:</b> Duckweed Holobiont Resource & Research Center (DHbRC), duckweed plant factory, duckweed reservoirs, Kasetsart University <a href="https://www.7icdra2024.com/?page_id=2424">https://www.7icdra2024.com/?page_id=2424</a>
<b>14 November 2024</b>	
<b>SESSION III: Physiology/Reproduction/Metabolisms</b>	
<b>Invited Lectures:</b>	
09:00-09:30	<b>Nomenclature, implication and interpretation of reality—<i>Wolffia</i> demonstrates that a plant is a colony</b> <i>Shu-Nong Bai</i> <i>Peking University, China</i>
09:30-10:00	<b>Polyploids of <i>Lemna gibba</i></b> <i>K Sowjanya Sree</i> <i>Banaras Hindu University, India</i>
<b>Oral presentation: Chair: K Sowjanya Sree</b>	
10:00-10:20	<b>Frond-level patterns and clonal differences in the light acclimation of <i>Lemna gibba</i></b> <i>Viktor Oláh</i> <i>University of Debrecen, Hungary</i>
10:20-10:40	<b>Viability of duckweed fronds after cryopreservation depends on developmental stages of plastids</b> <i>Anton Peterson</i> <i>Leibniz Institute of Plant Genetics and Crop Plant Research, Germany</i>
10:40-12:00	<b>Coffee break/Poster session II* (Even No. see the page of the abstract book)</b>
12:00-13:00	<b>Lunch</b>
<b>Oral presentation: Chair: K Sowjanya Sree</b>	
13:00-13:20	<b>Circadian regulation in the association of physiology of duckweed and its aquatic environment</b> <i>Tokitaka Oyama</i> <i>Kyoto University, Japan</i>
13:20-13:40	<b>Screening method and metabolic analysis of plant anti-aging microorganisms via ammonia-induced senescence in the duckweed <i>Wolffia microscopica</i></b> <i>Jiaming Zhang</i> <i>Chinese Academy of Tropical Agricultural Sciences, China</i>
13:40-14:00	<b>Advancing duckweed production: Technical and nutrient management innovations in re-circulating indoor vertical farms</b> <i>Finn Petersen</i> <i>University of Applied Sciences, Germany</i>
14:00-14:20	<b>Biofiltration, recovery and toxicity of chelated and ionic gadolinium forms using duckweed <i>Lemna gibba</i></b> <i>Sándor Szabó</i> <i>University of Nyíregyháza, Hungary</i>
14:20-14:40	<b>Progress in toxicity testing with duckweeds</b> <i>Paul Ziegler</i> <i>University of Bayreuth, Germany</i>
14:40-14:50	<b>Group photo</b>
14:50-15:30	<b>Coffee break &amp; General assembly:</b> ISCDRA chair's report, election results, future ICDDRA site
15:30-21:00	<b>Excursion II:</b> Dinner cruise <a href="https://www.7icdra2024.com/?page_id=2424">https://www.7icdra2024.com/?page_id=2424</a>

**15 November 2024**

**SESSION IV: Microbiome & Interactions**

**Invited Lectures:**

- 09:00-09:30 **DABs and SynComs – from unravelling microbial ecology to designing duckweed holobionts**  
*Eric Lam*  
*Rutgers the State University of New Jersey, USA*
- 09:30-10:00 **Community assembly in synthetic duckweed microbiome**  
*Hidehiro Ishizawa*  
*University of Hyogo, Japan*
- 10:00-10:30 **Duckweed microbiomes potentially influence plant traits on growth, nutrition, and stress tolerance**  
*Arinthip Thamchaipenet*  
*Kasetsart University, Thailand*

**10:30-10:50 Coffee break**

**Oral presentation: Chair: Eric Lam**

- 10:50-11:10 **Microbial cooperation in duckweed microbiomes: Unraveling the mechanisms of cobalamin biosynthesis**  
*Rhishika Dutta*  
*Ben-Gurion University of the Negev, Israel*
- 11:10-11:30 **Reconstruction of a functional duckweed holobiont to reduce nutrient competition with microalgae for high-yield biomass production**  
*Huyền Thị Thanh Phạm*  
*Hokkaido University, Japan*

**SESSION V: Applications**

**Invited Lecture:**

- 11:30-12:00 ***Lemna*: from novel food application to the market**  
*Ingrid M. van der Meer*  
*Wageningen University & Research, The Netherlands*

**12:00-13:00 Lunch**

**Oral presentation: Chair: Metha Meetam**

- 13:00 -13:20 **Monitoring a duckweed-based remediation system for nutrient recovery from pig manure into feed**  
*Marie Lambert*  
*Provincial Research and Advice Centre for Agriculture and Horticulture, Belgium*
- 13:20 -13:40 **Leveraging acidification pretreatment of dairy digestate to increase duckweed protein yields while decreasing ammonia volatilization and water use**  
*Kari Lagan*  
*The Pennsylvania State University, USA*
- 13:40 -14:00 **Methane production potential from co-digestion of *Spirodela polyrhiza* and tapioca starch wastewater**  
*Thanapat Thepubon*  
*Khon Kaen University, Thailand*
- 14:00 -14:20 **The Impact of drum drying on the amino acid profile and protein digestibility of *Wolffia globosa***  
*Werawich Pattarayingkul*  
*Kasetsart University, Thailand*

<b>14:20-14:40</b>	<b>Coffee break</b>
<b>Panel discussion:</b>	
14:40-15:50	<b>Experience sharing: Challenges in large-scale duckweed cultivation, product innovation &amp; commercialization</b> <i>Mettha Meetam</i> <i>Mahidol University, Chief Technologist &amp; Co-founder Advanced Greenfarm, Thailand</i> <i>Tsipi Shoham</i> <i>CEO &amp; Co-founder GreenOnyx, Israel</i> <i>Kayleigh Dugas</i> <i>Research Engineer, Fyto, USA</i> <i>Sven Kaufmann</i> <i>CEO, Sustainable Planet, UK</i>
<b>15:50-16:30</b>	<b>Closing ceremony &amp; oral/poster awards</b>
<b>16 November 2024</b>	
08:00-16:30	<b>Excursion III: ADGreen Wolffia farm, Red Lotus floating market, Phra Pathom Chedi</b> <a href="https://www.7icdra2024.com/?page_id=2424">https://www.7icdra2024.com/?page_id=2424</a>

\*1-min talk VDO clip for each poster presentation will be displayed at the venue.