



# 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
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>Dinner reception and <i>Wolffia</i>/products tasting</b>
<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:</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 Lectures:</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</b>	<b>Lunch</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:</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 polyrizha</i>: novel insights into plant rDNA evolution and regulation</b> <i>Nikolai Borisjuk</i> <i>Huaiyin Normal University, China</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>
<b>15:50-17:00</b>	<b>Coffee break/Poster session I*</b>
16:30-17:00	ISCDRA business meeting
17:00-18:30	<b>Excursion Ib: Duckweed Holobiont Resource &amp; Research Center (DHbRC), duckweed plant factory, duckweed reservoirs, Kasetsart University</b>

**14 November 2024**

**SESSION III: Physiology/Reproduction/Metabolisms**

**Invited Lectures:**

09:00-09:30 **Nomenclature, implication and interpretation of reality—*Wolffia* demonstrates that a plant is a colony**

*Shu-Nong Bai*  
*Peking University, China*

09:30-10:00 **Polyploids of *Lemna gibba***

*K Sowjanya Sree*  
*Banaras Hindu University, India*

**Oral presentation:**

10:00-10:20 **FronD-level patterns and clonal differences in the light acclimation of *Lemna gibba***

*Viktor Oláh*  
*University of Debrecen, Hungary*

10:20-10:40 **Viability of duckweed fronds after cryopreservation depends on developmental stages of plastids**

*Anton Peterson*  
*Leibniz Institute of Plant Genetics and Crop Plant Research, Germany*

**10:40-12:00 Coffee break/Poster session II\***

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

13:00-13:20 **Circadian regulation in the association of physiology of duckweed and its aquatic environment**

*Tokitaka Oyama*  
*Kyoto University, Japan*

13:20-13:40 **Screening method and metabolic analysis of plant anti-aging microorganisms via ammonia-induced senescence in the duckweed *Wolffia microscopica***

*Jiaming Zhang*  
*Chinese Academy of Tropical Agricultural Sciences, China*

13:40-14:00 **Advancing duckweed production: Technical and nutrient management innovations in re-circulating indoor vertical farms**

*Finn Petersen*  
*University of Applied Sciences, Germany*

14:00-14:20 **Biofiltration, recovery and toxicity of chelated and ionic gadolinium forms using duckweed *Lemna gibba***

*Sándor Szabó*  
*University of Nyíregyháza, Hungary*

14:20-14:40 **Progress in toxicity testing with duckweeds**

*Paul Ziegler*  
*University of Bayreuth, Germany*

14:40-14:50 Group photo

**14:50-15:30 Coffee break & General assembly:** ISCDRA chair's report, election results, future ICDRA site

15:30-21:00 **Excursion II:** Chao Phraya River dinner cruise (private boat)

**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:**

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**

*Dr. Ingrid M. van der Meer*

*Wageningen University & Research, The Netherlands*

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

**Oral presentation:**

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*

**14:20-14:40 Coffee break**

**Panel discussion:**

**14:40-15:50 Experience sharing: Challenges in large-scale duckweed cultivation, product innovation & commercialization**

*Metha Meetam*

*Mahidol University, Chief Technologist & Co-founder Advanced Greenfarm, Thailand*

*Tsipi Shoham*

*CEO & Co-founder GreenOnyx, Israel*

*Kayleigh Dugas*

*Research Engineer, Fyto, USA*

*Sven Kaufmann*

*CEO, Sustainable Planet, UK*

**15:50-16:30 Closing ceremony & Poster awards**

**16 November 2024**

**08:00-16:30 Excursion III: ADGreen *Wolffia* farm, floating market, orchid farm**

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