



The FIU-JSPS symposium “*Arsenic: from the environment to medicine*” was held on Tuesday, November 09, 2021 from 8 am to 3:30 pm U.S. Eastern Standard Time. The Barry P. Rosen, Department of Cellular Biology and Pharmacology, Florida International University, Herbert Wertheim College of Medicine. In this lecture series, Japanese and FIU scientists described how a search for methodologies to mitigate arsenic contamination in rice led to the discovery of a new arsenic-containing new antibiotic with potential applications for anticancer drug discovery. This symposium is the outcome of a lectureship award last year from the Japanese Society for the Promotion of Science to bring the renown Japanese scientist Satoru Ishikawa to the United States. The world-wide pandemic changed our plans, and the symposium was postponed to 2021 as in virtual form. Professor Ishikawa and his associate Masato Kuramata gave their presentations from Japan, and the FIU speakers gave their presentations from Miami, Florida. At 9:45 am JSPS officers will host an informational session describing their programs to support collaboration between Japanese and American researchers. Because of the time difference between Japan and Miami, it was difficult to schedule all of the presentations at a time when participants from other places in the world could comfortably attend by zoom. For that reason the entire lecture series was recorded and available to the general public for one week at:

[https://fiudit-my.sharepoint.com/:v:/g/personal/thstein\\_fiu\\_edu/ESoCDu1RObNIjY2E4Bq4H5UBcqksgHI2rb49UjZv-8nIPg?e=gcL7x1](https://fiudit-my.sharepoint.com/:v:/g/personal/thstein_fiu_edu/ESoCDu1RObNIjY2E4Bq4H5UBcqksgHI2rb49UjZv-8nIPg?e=gcL7x1)

The keynote speaker was Satoru Ishikawa, Institute for Agro-Environmental Sciences, NARO, Tsukuba, Japan. Dr. Ishikawa is the leader of the Inorganic Chemicals group of Institute for Agro-Environmental Sciences, NARO and visiting professor of Chiba University, Japan. He is a board member of Japanese Arsenic Scientist’s Society. He received an Award from the Japanese Society of Soil Science and Plant Nutrition in 2017 and a Prize for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology in 2019. His research focus is understanding the physiological and molecular mechanisms that regulate the toxic elements including arsenic, cadmium and radiocesium in rice. He produced several new rice varieties that accumulate less of these toxic metals. He and his co-worker Dr. Masato Kuramata gave talks on their studies on mitigation of arsenic in rice and how that led to the discovery of the novel arsenic-containing antibiotic arsinothricin (AST) that is produced by a rice rhizosphere bacterium. The four FIU speakers followed up with their characterization and chemical synthesis of AST, and the use of AST and other organoarsenicals for cancer chemotherapy.

#### **-Topics Discussed with Outcomes & Future Challenges**

The topic discussed were the discovery, characterization and chemical synthesis of AST, and the future potential applications for antibiotic and cancer chemotherapy.

# Arsenic: from environment to medicine

Florida International University Herbert Wertheim College of Medicine is hosting a FREE virtual symposium on Wednesday, November 9, 2021 from 8 am to 3:30 pm EST.

**Keynote Speaker:** Satoru Ishikawa, Institute for Agro-Environmental Sciences, NARO, Tsukuba, Japan, *Discovery of arsinothricin, a novel arsenic-containing antibiotic*



This lecture series is generously sponsored by the Japan Society for the Promotion of Science (JSPS). JSPS officers will host an informational session at 9:45 am describing their programs to support collaboration between Japanese and American researchers.



**FIU** | Herbert Wertheim  
College of Medicine  
FLORIDA INTERNATIONAL UNIVERSITY

**JSPS symposium “Arsenic: from the environment to medicine”**

**Tuesday, November 09, 2021  
8 am to 3:30 pm U.S. Eastern Standard Time**

<b>TIME</b>	<b>TITLE</b>	<b>SPEAKERS</b>
8:00 - 8:15 am	Introduction	Barry P. Rosen, Department of Cellular Biology and Pharmacology, Florida International University, Herbert Wertheim College of Medicine
8:15 - 9:00 am	Strategies for reducing the arsenic level in rice toward food safety and human health	Satoru Ishikawa, Institute for Agro-Environmental Sciences, NARO, Tsukuba, Japan
9:00 - 9:45 am	Arsenic biotransformations in the rice rhizosphere and the discovery of arsinothricin, a novel organoarsenical antibiotic	Masato Kuramata, Institute for Agro-Environmental Sciences, NARO, Tsukuba, Japan
9:45 - 10:10 am	JSPS Information Session (15 min) with Q&A (10 min)	
10:10 - 10:45 am	Break	
10:45 - 11:30 am	Synthesis and degradation of organoarsenical antibiotics	Masafumi Yoshinaga, Department of Cellular Biology and Pharmacology, FIU Herbert Wertheim College of Medicine
11:30 - 12:15 pm	Chemical synthesis of arsinothricin	Stanislaw F. Wnuk, Department of Environmental Health Sciences, FIU Robert Stempel College of Public Health & Social Work
12:15 - 1:15 pm	Lunch break	
1:15 - 2:00 pm	Organoarsenicals in cancer chemotherapy	Yong Cai, Department of Chemistry and Biochemistry, FIU College of Arts, Sciences & Education
2:00 - 2:45 pm	A potential novel arsenic-containing anti-cancer drug for triple-negative breast cancer (TNBC)	Venkadesh S. Nadar, Department of Cellular Biology and Pharmacology, FIU Herbert Wertheim College of Medicine
2:45 - 3:30 pm	Q&A, Discussion and Closing	Barry P. Rosen