The 22nd Young Scientist Seminar

"Establishment of International Research Network for Bioresources and Their Utilization"

First Circular

6th-7thDecember 2025
(Hybrid Meeting)

Organized by:
Yamaguchi University

Invitation

On behalf of the Organizing Committee, we are pleased to invite you to the 22nd Young Scientist Seminar (YSS). This seminar will be held on 6th-7th December 2025 as a hybrid event. The YSS aims to establish international network among young researchers including students, to broaden their knowledge about fundamental principles and recent developments in scientific fields around the world.

Organization Committee

General Manager Yuto Kimura

Ayaka Kakee, Daichi Kioka, Daisuke Saga, Fluke, Hana Ogushi Isse Taiga, Kodai Iwanaga, Kosei Fujimura, Mirai Ando, Reina Iida, Riko Kobayashi, Rihito Sakaue, Shuto Suzuki, Yuto Kuwana

Sessions

The scientific program is composed of plenary lectures by invited speakers and parallel group sessions in which each young scientist gives a talk and discusses with the other group members. One representative young scientist will be selected in each group, and they will have opportunity to give talks in a plenary session.

Scope

The scientific scope of the seminar follows most of the well-received features of the previous events not only in the area of utilization of bioresources but also in the biological field.

Language of the Seminar

The official language of the seminar is English, and no translation facilities are available.

Seminar Theme

Establishment of international research network for bioresources and their utilization.

Social Program

We're planning some online events bringing everyone closer.

Confidentiality

Shooting (screenshots, etc.) and recording of slides and talks during this seminar are strictly

prohibited. Participants are required to submit a written oath with signature.

Registration

Please register at:
https://x.gd/2p5oS

Abstract

Please submit a 1-page abstract. A format and an example will be found at the end of this document. Submission deadline and method will be announced in the 2nd circular.

Important Dates

Registration deadline: 30th September, 2025
Abstract deadline: to be announced

yssyamaguchi.u@gmail.com
Yuto Kimura (Mr) the contact person of the 22nd YSS

Abstract format

The following format is required:

1. **A single page**.
2. Adjust line spacing to 1.15 in Microsoft Word.
3. Typewritten on an **A4** paper with margin as follows:
   - Top margin **35 mm**
   - Bottom margin **25 mm**
   - Left margin **25 mm**
   - Right margin **25 mm**
4. Use **Times New Roman** font except for special characters such as α and μ.
5. For title, use bold letters in 14 pt size and align center.
6. For authors, use bold letters in 10 pt size and align left.
7. For affiliations, use plain letters in 10 pt size and align left.
8. For text, use plain letters in 12 pt size and align left.
9. File name: please put your name to the abstract file, i.e., given name_FAMILY NAME.

   For example, ●●●_●●●.docx
   or
   ●●●_●●●.doc

Oral presentation

Invited speakers: The presentation time is 30 minutes and 10 minutes for discussion.
Other speakers: The presentation time is 10 minutes and 5 minutes for discussion in the group session.

Important Deadline
Submission of abstract: to be announced

Abstract form

(Title)

(Authors)_____[1],_____[2],_____[3]and_____[1]
(Affiliations)[1]_____,[2]_____,[3]

Sample abstract

Intramolecular electron transport in the membrane-bound aldehyde dehydrogenase complex of *Gluconacetobacter diazotrophicus*

Roni Miah[1], Rio Izumi[2], Naoya Kataoka[1,2,3], Kazunobu Matsushita[1,2,3], and Toshiharu Yakushi[1,2,3]
[1]Grad Sch Sci Tech Innov, Yamaguchi Univ, [2]Fac Agric, Yamaguchi Univ, [3]RCTMR, Yamaguchi Univ

Acetic acid fermentation is carried out by two-step oxidation of ethanol to acetic acid with the two membrane-bound enzymes of acetic acid bacteria: pyrroloquinoline quinone-dependent alcohol dehydrogenase and molybdopterin-dependent aldehyde dehydrogenase (ALDH). Although the reducing equivalents of substrates are transferred to ubiquinone in the membrane, intramolecular electron transport in ALDH is not understood. Previously, we reported that there are two molecular species of ALDH (AldFGH and AldSLC), and AldFGH is important for acetic acid fermentation in *Gluconacetobacter diazotrophicus* PAL5 and dependent on a form of molybdopterin but not pyrroloquinoline quinone (PQQ) through markerless gene disruption reverse genetics studies (1).

Here, we tried to understand how AldFGH ALDH works through biochemical approach and genetic engineering for functional analysis of each subunit. We purified the AldFGH intact complex from the triple deletion derivative MR17 strain (Δ*aldSLC* Δ*adhAB* ΔPQQ) of *Ga. diazotrophicus* PAL5 which lacks the genes for AldSLC and ADH to avoid contamination of ALDH activity and the genes for PQQ biosynthesis. Purified AldFGH complex contained three subunits with molecular masses of 80, 45, 17 kDa and showed acetaldehyde:ubiquinone (Q2) reductase activity. Cytochrome of the AldFGH complex derived from hemes C in the AldF subunit was reduced with acetaldehyde. Then, we genetically dissected the AldFGH complex into AldGH and AldF and reconstituted them. The AldGH subcomplex showed acetaldehyde:ferricyanide reductase activity, but did not Q2 reductase. ALDH activity by AldGH was not found in the membranes but in the crude soluble fraction of the recombinant strain, suggesting the AldF subunit is responsible for membrane-binding of the AldFGH complex. Reconstituted AldFGH complex from the AldGH subcomplex and AldF showed a Q2 reductase activity. Absorption spectrum of the purified AldGH subcomplex suggested the presence of [Fe-S] cluster, which can be reduced by acetaldehyde. We propose a model that electrons of the substrate are abstracted on molybdopterin in the AldH subunit and transferred to [Fe-S] cluster(s) in the AldG subunit, followed by electron transport to hemes C in the AldF subunit, which is the site of ubiquinone reduction in the membrane.

(1) Miah R et al. (2021) *Appl Microbiol Biotechnol* 105, 2341-2350.