

The 4th Annual Meeting for Whole-Organism Science Society

Joint Meeting with
The 13th Annual Meeting of
Structural-Biological Whole Cell Project

サブテーマ
遠い将来への期待と予測

September 26 (Fri) - 27 (Sat), 2014

Osaka University Hall (豊中キャンパス・大阪大学会館)
Toyonaka campus, Osaka University, Toyonaka, Osaka, Japan
〒560-0043 大阪府 豊中市 待兼山町 1-13

<https://55099zzwd.coop.osaka-u.ac.jp/daigaku-hall/files/access.html>

<http://www.thermus.org/>

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The 4th Annual Meeting for Whole-Organism Science Society
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PROGRAM

Friday, September 26

13:00 - 13:15 **Introduction**
Seiki Kuramitsu

<Symposium> Model Organisms (1) Prokaryotes Abstract No.

Chair persons: Gota Kawai and Ayako Yoshida
13:15 - 14:00 ***Thermus thermophilus* HB8 高度好熱菌** 【11】
Genes Involved in Biosynthetic Reactions of Branched Polyamines in an Extreme Thermophile, *Thermus thermophilus*
高度好熱菌 *Thermus thermophilus* の分岐ポリアミン生合成反応に関わる遺伝子群
○Tairo Oshima and Toshiyuki Moriya
(Inst. Environ. Micorobiol., Kyowa-kako Co. Ltd.)

14:00 - 14:30 ***Thermus thermophilus* HB8 高度好熱菌の翻訳後修飾** 【31】
Post-Translational Modification of *Thermus thermophilus* HB8
○Ryoji Masui, Kwang Kim, Hiroki Okanishi, Yota Iio, and Seiki Kuramitsu
(Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

***Thermus thermophilus* HB8 高度好熱菌** 【30】
Database for Genome-Wide Proteome Analysis of *Thermus thermophilus* HB8
プロテオーム解析による細胞全体のタンパク質の解析
○Kwang Kim¹, Hiroki Okanishi¹, Tomofumi Sakai², Ryoji Masui¹,
and Seiki Kuramitsu^{1,2}
(¹Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.,
²Grad. Sch. Frontier Biosci., Osaka Univ.)

Chair persons: Yoshinori Koyama and Akira Nakamura
14:30 - 15:00 ***Thermus thermophilus* HB8 ウィルス** 【21】
Characterization of *Thermus thermophilus* Phage φMN1
Thermus thermophilus に感染するφMN1 の解析
○Masatada Tamakoshi, Tomoya Nakayama, Kento Takahashi,
and Akihiko Yamagishi
(Dept. Appl. Life Sci., Tokyo Univ. Pharm. Life Sci.)

15:00 - 15:15 **Chaperons of *T. thermophilus* and *E. coli* ウィルスのシャペロン** 【22】
Functional Analysis of ΦTMA-Encoded GroES Like Protein
ファージウィルスのシャペロン: タンパク質の folding に果たす役割
○Kohei Kondo¹, Masatada Tamakoshi², Ayumi Koike-Takeshita¹
(¹Dept. Appl. Chem. Biosci., Grad. Sch. Eng., Kanagawa Inst. Tech.,
²Sch. Life Sci., Tokyo Univ. Pharm. Life Sci.)

15:15 - 15:30 **Thermophilic Enzymes 好熱菌の酵素** 【23】

Thermostable DNA Repair Proteins aid DNA Amplification Techniques

高度好熱菌由来 DNA 修復タンパク質の核酸増幅反応への応用

Kenji Fukui

(Dept. Biochem., Osaka Medical College)

15:30 - 16:00 **Break, Taking Photographs**

16:00 – 17:15 **Oral Presentation**

Abstract No.

Chair persons: Kenji Fukui and Naoyuki Kondo

Drosophila melanogaster ショウジョウバエ

【3B】

Transcriptome analysis to identify genes responding to mechanical force in developing

Drosophila embryos

ショウジョウバエ胚における機械的力依存的な遺伝子の網羅的同定

○Takaaki Ishibashi¹, and Kenji Matsuno¹

(¹Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

Detura metel 生活環

【7】

A life of Datura Alba Nees

曼荼羅華の一生

○In Sook Matsui

(Department of Biochemistry, Wakayama Medical University, Japan)

Thermus thermophilus 高度好熱菌

【13】

Analysis of Toxin-Antitoxin System in Thermus thermophilus HB27

Thermus thermophilus HB27 株の Toxin-Antitoxin System の解析

○Yuqi Fan, Takayuki Hoshino, and Akira Nakamura

(Fac. Life Environ. Sci., Univ. Tsukuba)

Sulfolobus acidocaldarius 古細菌

【14】

Function and regulation of enzymes involved in amino acid biosynthesis of Sulfolobus acidocaldarius

Sulfolobus acidocaldarius のアミノ酸生合成酵素の機能と調節機構の解析

○Takeo Tomita¹, Kento Takahashi¹, Nagisa Akiyama¹, and Makoto Nishiyama^{1,2}

(¹The Univ. of Tokyo, ²SPRING-8)

Thermus thermophilus HB8 高度好熱菌

【15】

Study on amino acid signal transduction mechanism of Thermus thermophilus

高度好熱菌 *Thermus thermophilus* におけるアミノ酸シグナル伝達機構の解析

○Tetsuo Kubota, Hajime Matsushita, Takeo Tomita, Tomohisa Kuzuyama,
and Makoto Nishiyama

(Biotechnology Research Center, The Univ. of Tokyo)

Thermococcus kodakarensis 超好熱菌

【16】

Characterization of an Ancestral-type β-Decarboxylating Dehydrogenase from

Thermococcus kodakarensis

Thermococcus kodakarensis 由来の祖先型β脱炭酸脱水素酵素の解析

○Tetsu Shimizu, Lulu Yin, Kento Takahashi, Takeo Tomita, Tomohisa Kuzuyama,
and Makoto Nishiyama

(Biotechnology Research Center, The Univ. of Tokyo)

***Thermus thermophilus* HB8 高度好熱菌**

【18】

Interaction Analysis between PurF and PurD from *Thermus thermophilus*

Thermus thermophilus 由来 PurF と PurD の相互作用解析

○Hironori Ishii¹, Gota Kawai², and Gen-ichi Sampei¹

(¹Univ. Electro-Commun., ²Chiba Inst. Tech.)

***Thermus thermophilus* HB8 and Others 高度好熱菌を含むモデル生物**

【19】

Reaction Mechanism of Glutamine Amidotransferases in the Purine Biosynthesis

プリン生合成系におけるグルタミンアミド基転移酵素の反応機構

○Yuzo Watanabe¹, Gen-ichi Sampei², and Gota Kawai¹

(¹Chiba Inst. Tech., ²Univ. Electro-Commun.)

***Thermus thermophilus* HB8 高度好熱菌**

【20】

Are Modified Nucleosides in tRNA Responsible for D20 Formation of *Thermus thermophilus*?

真正細菌 *Thermus thermophilus* の D20において、tRNA の他の修飾ヌクレオチドは形成に関与しているのか？

○楠葉浩晃, 吉田剛士, 岩崎絵梨, 粟井貴子, 平田 章, 富川千恵, 風山 愛,
山上龍太, 堀 弘幸
(愛媛大学大学院理工学研究科)

***Thermus thermophilus* HB8: DNA Recombination 高度好熱菌: DNA 組換え**

【24】

Functional Analysis of a Bacterial RecA Parologue, RadA/Sms

新規 DNA 組換え系タンパク質の機能解析

○Masao Inoue¹, Yuki Fujii², Kenji Fukui³, Noriko Nakagawa¹, Ryoji Masui¹,
and Seiki Kuramitsu^{1,2}

(¹Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ., ²Grad. Sch. Frontier Biosci., Osaka Univ.,

³Dept. Biochem., Osaka Medical College)

***Thermus thermophilus* HB8: DNA Recombination 高度好熱菌: DNA 組換え**

【25】

Roles of Archaeal-Type Endresection Enzymes in *Thermus thermophilus* HB8

Thermus thermophilus HB8 由来アーキア型エンドリセクション関連酵素の役割

○Yuki Fujii^{1,2}, Masao Inoue³, Kenji Fukui⁴, Noriko Nakagawa³, Kwang Kim³,
Ryoji Masui³, Masahiro Ueda^{1,2,3}, and Seiki Kuramitsu^{1,3}

(¹Grad. Sch. Frontier Biosci., Osaka Univ., ²RIKEN QBiC, ³Dept. Biol. Sci.,

Grad. Sch. Sci., Osaka Univ., ⁴Dept. Biochem., Osaka Medical College)

***T. thermophilus* HB8: DNA-Binding Protein HU 高度好熱菌: DNA 結合蛋白質 HU**

【26】

Analysis of nucleoid-associated protein HU in *Thermus thermophilus* HB8

好熱菌における核様体構成タンパク質 HU の解析

○Yuya Nishida¹, Ryoji Masui², and Seiki Kuramitsu^{1,2}

(¹Grad. Sch. Frontier Biosci., Osaka Univ., ²Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

***T. thermophilus* HB8: DNA-Binding Protein HU 高度好熱菌: DNA 結合蛋白質 HU**

【27】

Thermal Stability of HU Protein from *Thermus thermophilus* HB8

高度好熱菌 HU の熱安定性の解析

○Ayae Oka¹, Yuya Nishida², Ryoji Masui³, and Seiki Kuramitsu^{2,3}

(¹Dept. Biol. Sci., Sch. Sci., Osaka Univ., ²Grad. Sch. Frontier Biosci., Osaka Univ.,

³Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

New Enzyme-Activity Measurement 質量分析法を利用した酵素活性測定法

[29]

A New Method for Real-Time Analysis of Nuclease Reaction

ヌクレアーゼ反応の定量的・連続的な測定法の開発

○Tomofumi Sakai¹, Hiroki Okanishi², Kwang Kim², Ryoji Masui², and Seiki Kuramitsu^{1,2}

(¹Grad. Sch. Frontier Biosci., Osaka Univ., ²Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

Post-Translational Modification: Lys Acylation 翻訳後修飾: Lys のアシル化

[32]

Post-Translational Modification: Proteome-Wide Analysis of Lys Acylation in

T. thermophilus: (1) Lysine Acetylation and Propionylation

高度好熱菌 *Thermus thermophilus* における翻訳後修飾アシル化のプロテオーム解析:

(1) Lys 残基のアセチル化とプロピオニル化

○Hiroki Okanishi, Kwang Kim, Ryoji Masui, and Seiki Kuramitsu

(Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

Post-Translational Modification: Acetylation 翻訳後修飾: Lys のアセチル化

[33]

Post-Translational Modification: Proteome-Wide Analysis of Lys Acylation in

T. thermophilus: (2) Protein Acetyltransferase (TtPat)

高度好熱菌 *Thermus thermophilus* における翻訳後修飾アシル化 のプロテオーム解析:

(2) タンパク質アセチル化酵素 (TtPat)

○Akane Furuya¹, Hiroki Okanishi², Takemasa Nagao¹, Iino Masatomo¹, Kwang Kim²,

Noriko Nakagawa², Ryoji Masui², and Seiki Kuramitsu²

(¹Dept. Biol. Sci., Sch. Sci., Osaka Univ., ²Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

Post-Translational Modification: Acetylation 翻訳後修飾: Lys のアセチル化

[34]

Post-Translational Modification: Proteome-Wide Analysis of Lys Acyklination in

T. thermophilus: (3) NAD⁺-Dependent Protein Deacetylase (TtSrtN)

高度好熱菌 *Thermus thermophilus* における翻訳後修飾アシル化のプロテオーム解析:

(3) NAD⁺依存のタンパク質脱アセチル化酵素

○Masatomo Iino¹, Hiroki Okanishi², Akane Furuya¹, Takemasa Nagao¹, Kwang Kim²,

Noriko Nakagawa², Ryoji Masui², and Seiki Kuramitsu²

(¹Dept. Biol. Sci., Sch. Sci., Osaka Univ., ²Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

Post-Translational Modification: Acetylation 翻訳後修飾: Lys のアセチル化

[35]

Post-Translational Modification: Proteome-Wide Analysis of Lys Acylation in

T. thermophilus: (4) Zn²⁺-Dependent Protein Deacetylase (TtAcuC)

高度好熱菌 *Thermus thermophilus* における翻訳後修飾アシル化のプロテオーム解析:

(4) Zn²⁺依存性タンパク質脱アセチル化酵素 (TtAcuC)

○Takemasa Nagao¹, Hiroki Okanishi², Akane Furuya¹, Iino Masatomo¹, Kwang Kim²,

Noriko Nakagawa², Ryoji Masui², and Seiki Kuramitsu²

(¹Dept. Biol. Sci., Sch. Sci., Osaka Univ., ²Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

Post-Translational Modification: acylation 翻訳後修飾: アシル化

[36]

Analysis of protein acylation on metabolic enzymes and protein acyltransferase in

Thermus thermophilus HB27

高度好熱菌 *Thermus thermophilus* HB27 における短鎖アシル化修飾による

代謝酵素の調節機構とタンパク質アシル化酵素の解析

○Ayako Yoshida¹, Hiroyuki Yamamoto¹, Takeo Tomita¹, Makoto Nishiyama¹,

Minoru Yoshida², and Saori Kosono^{1,2}

(¹Biotechnology Research Center, The Univ. of Tokyo, ²CSRS, RIKEN)

Post-Translational Modification: Phosphorylation 翻訳後修飾：リン酸化 [37]

Post-translational modification: Proteome and Transcriptome Analysis of Protein

Phosphorylation in *Thermus thermophilus*

高度好熱菌 *Thermus thermophilus* における翻訳後修飾: タンパク質のリン酸化修飾

○Yota Iio, Kwang Kim, Noriko Nakagawa, Ryoji Masui, and Seiki Kuramitsu

(Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

17:15 - 17:45 **Poster Discussion (odd number)**

17:45 - 18:15 **Poster Discussion (even number)**

18:15 - 20:00 **Banquet** (with local Minoh Beer (<http://www.minoh-beer.jp/>))

Saturday, September 27

8:30 - 9:00 **Morning Poster Discussion**

<Symposium> **Model Organisms (2) Prokaryote**

Abstract No.

Chair Persons: Akio Ebihara and Katsunori Yoshikawa

9:00 - 9:30 ***Streptococcus* バイオフィルム形成阻害薬の開発** 【8】

To Develop an Anti-Biofilm Drug for *Streptococcus* Bacteria

ストレプトコッカス属細菌のバイオフィルム形成阻害薬の開発を目指して

Takato Yano

(Dept. Biochem., Fac. Med., Osaka Medical College)

9:30 - 9:45 ***Thermus thermophilus* 高度好熱菌** 【12】

The Universally Conserved Essential tRNA Modification, t6A, is Not Essential in *Thermus thermophilus* HB27

生物に必須の tRNA-t6A 修飾は *Thermus thermophilus* では必須ではない

○Akira Nakamura, Yuka Kawabata, Taihei Sawada, Kazumasa Kitahara,

Akiyoshi Onose, and Takayuki Hoshino

(Fac. Life Environ. Sci., Univ. Tsukuba)

9:45 - 11:00 <Symposium> **Model Organisms (3) *Drosophila melanogaster***

Abstract No.

Chair Persons: Kotaro Kimura and Ryoji masui

***Drosophila melanogaster* ショウジョウバエ** 【1】

Left or Right, That Is the Question.

ショウジョウバエを用いて明らかにする動物のからだが左右非対称になる仕組み

Kenji Matsuno

(Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

***Drosophila melanogaster* ショウジョウバエ** 【2】

Identification of genetic modifiers that interact with *pecanex*, encoding a component of Notch signaling in *Drosophila*

ショウジョウバエ *Pecanex* は小胞体の機能を介して Notch 情報伝達の活性化に寄与する

○Tomoko Yamakawa¹, Shiori Kubo¹ and Kenji Matsuno¹

(¹Dept. of Biol. Sci., Grad. Sch. of Sci., Osaka Univ.)

***Drosophila melanogaster* ショウジョウバエ** 【3】

The Role of N-Glycan Modifications of Notch Receptor in *Drosophila* Notch Signaling

Notch 情報伝達系における N 型糖鎖の役割

○Kenjiro Matsumoto¹, Shoko Nishihara², and Kenji Matsuno¹

(¹Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ., ²Soka Univ.)

11:00 - 11:30 <Symposium> Universal biology Abstract No.

Chair Persons: Akio Ebihara and Katsunori Yoshikawa

Universal biology 普遍の生物学

【*】

Toward universal biology

普遍の生物学へむけて

Tetsuya Yomo

(Depart. Bio-Info, Osaka Univ. JST ERATO)

11:30 - 12:00 <Symposium> Model Organisms (4) Prokaryote Abstract No.

Chair Persons: Akio Ebihara and Katsunori Yoshikawa

***Thermus thermophilus* HB8 and Others 高度好熱菌を含むモデル生物**

【17】

Molecular Evolution of the Enzymes in the Purine Biosynthetic Pathway

プリンヌクレオチド生合成系酵素の分子進化

○Gen-ichi Sampei¹ and Gota Kawai²

(¹Univ. Electro-Commun., ²Chiba Inst. Tech.)

12:00 - 12:40 Lunch Break

12:40 - 13:15 Poster Discussion

13:15 - 13:30 General Assembly (総会)

13:30 - 14:30 <Symposium> Model Organisms (5) *Caenorhabditis elegans*

Abstract No.

Chair Persons: Kenji Matsuno and Tomoko Yamakawa

***Caenorhabditis elegans* 線虫**

【4】

Reading the Mind of A Worm:

A Rigorous Quantitative and Integrative Analyses of Chemosensory Behavior in the Nematode *C. elegans*

(虫の)心を読む:定量的かつ統合的な線虫 *C. elegans* の化学応答行動の解析

Kotaro Kimura

(Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

***Caenorhabditis elegans* 線虫**

【5】

Understanding Information Processing for Olfactory Learning in the Nematode

C. elegans

匂い学習のための神経系の情報処理の研究

○Akiko Yamazoe, Kosuke Fujita and Kotaro Kimura

(Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

14:30 - 15:00 <Symposium> Bioinformatics Abstract No.

Chair Persons: Kenji Matsuno and Tomoko Yamakawa

Theoretical Biology 理論生物学

【6】

Mechanical communications in cell societies

細胞の押し合いへし合いから探る 細胞社会の恒常性維持

Koichi Fujimoto (Dept. Biol. Sci., Grad. Sch. Sci., Osaka Univ.)

15:00 - 15:15 Break

<Symposium> Engineering Innovation and Methodology Abstract No.

Chair Persons: Takero Tomita and Tairo Oshima

15:15 - 15:45 Enzymatic Biofuel Cell バイオ燃料電池 【9】

Improvement in Efficiency of Enzymatic Biofuel Cell Which Mimics Metabolic Pathways

生命の代謝過程を模倣することにより発電するバイオ燃料電池の性能向上

Tsutomu Mikawa
(RIKEN QBiC)

15:45 - 16:15 Escherichia coli 大腸菌 【10】

Metabolic Engineering of *Escherichia coli* for 3-Hydroxypropionic Acid

Production Based on the Genome-Scale Metabolic Simulation

ゲノムスケール代謝シミュレーションに基づいた3-ヒドロキシプロピオン酸生産大腸菌の代謝工学的育種

○Kento Tokuyama, Katsunori Yoshikawa, and Hiroshi Shimizu
(Grad. Sch. Info. Sci. Tech., Osaka Univ.)

16:15 - 16:45 Single-Molecule Imaging 分子イメージング 【28】

Administration of LFA-1 Conformational Changes at Immune Cell Contact Sites

○Naoyuki Kondo, Yoshihiro Ueda, and Tatsuo Kinashi
(Inst. of Biomed. Sci., Kansai Med. Univ.)

16:45 - 17:00 Award Ceremony

Tairo Oshima (President)

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ABSTRACTS

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Photographs



The 1st Annual meeting



The 2nd Annual meeting



The 3rd Annual meeting



The 4th Annual meeting



The 5th Annual meeting

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The 4th Annual Meeting for Whole-Organism Science Society
Joint Meeting with
The 13th Annual Meeting of Structural-Biological Whole Cell Project

MAP



学会会場: Osaka University Hall (豊中キャンパス・大阪大学会館 (旧イ号館))

Toyonaka campus, Osaka University, Toyonaka, Osaka, Japan

〒560-0043 大阪府 豊中市 待兼山町 1-13



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TEL.090-1023-2278 倉光成紀