

**9th Annual Meeting of
Structural - Biological Whole Cell Project of *Thermus thermophilus* HB8**

Program

Friday, August 20

- 13:30 – 13:45 **Welcoming remarks and overview of this meeting**
Seiki Kuramitsu
- Session 1** Abstract No.
- 13:45 – 14:15 **New micro-beam beamline at SPring-8, targeting at protein
micro-crystallography** 【22】
○Masaki Yamamoto¹, Kunio Hirata¹, Go Ueno¹, Yoshiaki Kawano¹, Takaaki Hikima¹,
Atsushi Nisawa¹, Hironori Murakami¹, Nobutaka Shimizu^{1,2}, and Takashi Kumasaka^{1,2}
(¹RIKEN SPring-8 Center, ²SPring-8/JASRI)
- 14:15 – 14:45 **Publication of experimental data in crystallographic analysis of
bacterial proteins by integrated database project** 【11】
○Naoki Kunishima, Akina Ozawa, Michihiro Sugahara, Akeo Shinkai,
Seiki Kuramitsu, and Yukuhiko Asada
(RIKEN SPring-8 Center)
- 14:45 – 15:15 **Biological resources of thermophiles *Thermus thermophilus* HB8,
Aeropyrum pernix and *Sulfolobus tokodaii* in the Gene Engineering Division,
RIKEN BioResource Center** 【13】
○Takehide Murata, Masato Okubo, Shotaro Kishikawa, Yukari Kujime,
and Chitose Kurihara
(Gene Engineering Division, RIKEN BioResource Center)
- 15:15 – 15:30 **Coffee Break**
- Session 2** Abstract No.
- 15:30 – 16:00 **Building a Database for *Deinococcus* and *Thermus* Comparative Genomic
Analyses** 【18】
Kei Yura
(Center Info. Biol., Ochanomizu Univ.)
- 16:00 – 16:30 **A general mechanism for SSB displacement from ssDNA upon SSB-protein
interaction** 【62】
○Jin Inoue^{1,2}, Takayuki Nagae³, Masaki Mishima³, Yutaka Ito³, Takehiko Shibata^{1,2},
and Tsutomu Mikawa^{1,2,4}
(¹RIKEN Adv. Sci. Inst., ²Grad. School of Nanobioscience, Yokohama City Univ.,
³Dept. Of Chem., Tokyo Metropolitan Univ., ⁴RIKEN SPring-8 Center)

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| 16:30 – 16:45 | DNA repair subsystems of <i>Thermus thermophilus</i> HB8 | 【61】 |
| | Kenji Fukui (RIKEN SPring-8 Center) | |
| 16:45 – 17:45 | Poster Preview | |
| 18:00 – 19:30 | Seminar Banquet (in Cafeteria) | |
| 20:00 – 20:45 | Poster Session (1) odd numbers | |
| 20:45 – 21:30 | Poster Session (2) even numbers | |
| 21:30 – 23:00 | Free Discussion (with posters, stars, and beer) | |

Saturday, August 21

Session 3

| | | Abstract No. |
|---------------|---|--------------|
| 9:00 – 9:30 | Formation of semiconductor nano-particles by bacteria isolated from natural oil-producing environments | 【51】 |
| | ○Toshifumi Sakaguchi ¹ and Ryosuke Shimizu ¹ (¹ Prefectural Univ. of Hiroshima) | |
| 9:30 – 10:00 | Mobile genetic elements of <i>Thermus thermophilus</i>: a functional insertion sequence and novel phages | 【16】 |
| | ○Masatada Tamakoshi ^{1,2} , Momoko Okuda ¹ , Motoki Sugisawa ¹ , and Akihiko Yamagishi ¹ (¹ Dept. Mol. Biol., Tokyo Univ. Pharm. Life Sci., ² RIKEN SPring-8 Center) | |
| 10:10 – 10:30 | Study of transcriptional regulatory system of <i>T. thermophilus</i> HB8: Regulatory mechanism of CRISPR/cas system | 【29】 |
| | Akeo Shinkai (RIKEN SPring-8 Center) | |
| 10:30 – 11:00 | Identification of small non-coding RNAs in <i>Thermus thermophilus</i> | 【14】 |
| | ○Gota Kawai ^{1,2} , Nobuharu Ito ¹ , Akito Shimada ¹ , Seiki Kuramitsu ^{2,3} , Gen-ichi Sampei ^{2,4} , and Yoshitaka Bessho ² (¹ Chiba Inst. Tech., ² RIKEN SPring-8 Center, ³ Osaka Univ., ⁴ Univ. of Electro-Commun.) | |
| 11:00 – 11:15 | Taking Photographs of All Members | |
| 11:15 – 12:30 | XFEL Tour | |
| 12:30 – 14:00 | Lunch Break | |

Session 4

Abstract No.

- 14:00 – 14:30 **Development of Coherent Imaging Methods Using Synchrotron Radiation and FEL** [23]
○Y. Nishino¹, Y. Tanaka², Y. Takahashi³, K. Maeshima⁴, M. Guizar-Sicairos⁵, Y. Bessho², T. Oroguchi⁶, Y. Joti⁷, M. Okada⁸, M. Okaya⁹, K. Nozaki¹⁰, R. Tsutsumi³, M. Yabashi⁷, M. Nagasono⁷, S. Matsui⁸, J. Fienup⁵, K. Yamauchi³, E. Matsubara⁹, and T. Ishikawa^{2,7}
(¹Hokkaido Univ., ²SPring-8/RIKEN, ³Osaka Univ., ⁴NIG, ⁵Univ. of Rochester, ⁶Yokohama City Univ., ⁷XFEL/RIKEN, ⁸Univ. of Hyogo, ⁹Kyoto Univ., ¹⁰Kwansei Gakuin Univ.)
- 14:30 – 15:00 **Recent activity of neutron diffractometers for biological crystallography at JAEA** [24]
○Taro Tamada, Kazuo Kurihara, Takashi Ohhara, and Ryota Kuroki
(Quantum Beam Science Directorate, Japan Atomic Energy Agency (JAEA))
- 15:00 – 15:30 **Integration of Imagings Using Electrons and Photons** [25]
Kuniaki Nagayama
(Okazaki Inst. for Integrative Bioscience & National Inst. for Physiol. Sciences)
- 15:30 – 16:00 **Coffee Break**

Session 5

Abstract No.

- 16:00 – 16:30 **The X-Ray Free Electron Laser in Japan** [26]
Tetsuya Ishikawa
(RIKEN SPring-8 Center)
- 16:30 – 17:00 **Challenges regarding the 3D imaging of biological macromolecules in the gas phase - Preparing for x-ray free electron laser experiments** [27]
○J. Günter Grossmann¹, Takaaki Hikima², James A. Austin¹, Andrew Entwistle³, Masaki Yamamoto², Richard W. Strange¹, Naoto Yagi², Ikuo Konishi³, Tetsuya Ishikawa², and S. Samar Hasnain¹
(¹Molecular Biophysics Group, Faculty of Health and Life Sciences, University of Liverpool; ²RIKEN SPring-8 Center; ³Shimadzu Research Laboratory, Manchester)
- 17:00 – 17:30 **The system-biological project of a model organism, *Thermus thermophilus* HB8: Frontier light for the central dogma of life** [28]
○Yoshitaka Bessho¹, Akeo Shinkai¹, and Seiki Kuramitsu^{1,2}
(¹RIKEN SPring-8 Center. ²Osaka University)
- 17:30 – 18:00 **Proteogenomics of bacteria: from genome annotation to physiology** [19]
Jean Armengaud
(CEA, DSV, iBEB, Lab Biochim System Perturb, France)
- 18:00 – 19:00 **Supper Break**

Session 6

Abstract No.

- 19:00 – 19:30 **Nucleic Acids (DNA and RNA) are not boring long polymers composed of only four types of nucleotides: evolutionary implications** **[21]**
Henri Grosjean
(University of Paris - South and CNRS UMR 8621, Institute of Genetics and Microbiology, France)
- 19:30 – 20:00 **Enigmas of Polyamine Metabolisms of *Thermus thermophilus* HB8: Is sym-Homospermidine Synthesized by a Unique Enzyme?** **[52]**
Tairo Oshima
(Institute of Environmental Microbiology, Kyowa-kako)
- 20:00 – 20:30 **Poster Session (3) (poster No. 1-43)**
- 20:30 – 21:00 **Poster Session (4) (poster No. 44-)**
- 21:00 – 23:00 **Free Discussion (with posters, stars, and beer)**

Sunday, August 22

Session 7

Abstract No.

- 9:00 – 9:30 **Multilateral analysis of purine and pyrimidine nucleotides biosynthetic pathway** **[57]**
○Gen-ichi Sampei^{1,2}, Ryota Miyazawa¹, Hideya Yamamoto¹, Sakiko Suzuki³, Seiki Baba^{2,4}, Noriko Nakagawa^{2,5}, Akio Ebihara², and Gota Kawai^{2,3}
(¹ University of Electro-Communications, ² RIKEN SPring-8 Center, ³ Chiba Institute of Technology, ⁴ Japan Synchrotron Radiation Research Institute, ⁵ Osaka University)
- 9:30 – 10:00 **The crystal structures of amino acid kinase LysZ and carrier protein LysW involved in lysine biosynthesis of *Thermus thermophilus*** **[56]**
○Ayako Yoshida, Takeo Tomita, Tomohisa Kuzuyama, and Makoto Nishiyama
(Biotechnology Research Center, The University of Tokyo)
- 10:00 – 10:30 **Network of modified nucleosides and modification enzymes in *Thermus thermophilus* tRNA** **[35]**
Chie Tomikawa¹, Kazuo Ishida¹, Takashi Kunibayashi¹, Anna Ochi¹, Tamotsu Kanai², Takashi Yokogawa³, Akira Hirata¹, Chikako Iwashita¹, and ○Hiroyuki Hori^{1,4,5}
(¹ Grad. Sch. of Eng. and Sci., Ehime Univ., ² Grad. Sch. of Eng., Kyoto Univ., ³ Fac. of Eng., Gifu Univ., ⁴ Venture Business Lab., Ehime Univ., ⁵ RIKEN SPring-8 Center)

- 10:30 – 11:00 **Biosynthesis of tRNA thiouridine in *Thermus thermophilus*** **【39】**
and its evolutionary relationship with eukaryotic ubiquitin system
○Naoki Shigi¹, Yuriko Sakaguchi², Shin-ichi Asai³, Tsutomu Suzuki²,
and Kimitsuna Watanabe⁴
(¹BIRC, AIST, ²Grad. Sch. Eng., Univ. of Tokyo, ³JBIC,
⁴Tokyo Univ. of Pharm. and Life Sci.)
- 11:00 – 11:15 **Coffee Break**
- 11:15 – 11:45 **Integrated database resources in Kyoto Encyclopedia of Genes and** **【12】**
Genomes (KEGG) and Database Center for Life Science (DBCLS)
Toshiaki Katayama
(Human Genome Center, Institute of Medical Science, University of Tokyo)
- 11:45 – 12:15 **New era for network biology of *Escherichia coli*** **【20】**
Hirotada Mori
(Graduate School of Biological Sciences, Nara Institute of Science and Technology)
- 12:15 – 12:40 **Strategies for Expression of Foreign Genes in *Thermus thermophilus* :** **【17】**
The Case Study of the Deinococcal Tryptophan Synthase Gene
Yoshinori Koyama
(AIST, BPRI)
- 12:40 – 12:55 **Possible missing genes of *Thermus thermophilus* HB8 genome** **【15】**
○Shin-ichi Yokobori¹, Tairo Oshima², and Yoshitaka Bessho³
(¹Dept. Mol. Biol., Sch. Life Sci., Tokyo Univ. Pharm. Life Sci., ²Kyowa Kako,
³RIKEN SPring-8 Center)
- 12:55 – 13:00 **Closing remarks**
Seiki Kuramitsu