High Pressure Bioscience and Biotechnology (HPBB) conference is held as an every two-year annual meeting to have fruitful discussion in most recent and exciting research in the bio-field at high pressure. Prior international conferences have been held at Kyoto (Japan, 2000 (1st)), Dortmund (Germany, 2002 (2nd)), Rio de Janeiro (Brazil, 2004 (3rd)), Tsukuba (Japan, 2006 (4th)), San Diego (United States, 2008 (5th)) and Freising (Germany, 2010 (6th)). The 7th conference is held in Otsu, Japan, October 29 – November 2, 2012.
Organized by

The International Association of High Pressure Bioscience and Biotechnology
Japanese Research Group of High Pressure Bioscience and Biotechnology (JHPBB)

Jointly hosted by

The Japan Society of High Pressure Science and Technology (JSHPST)

Supported by

The Chemical Society of Japan (CSJ)
The Biophysical Society of Japan (BSJ)
Japan Society for Bioscience, Biotechnology, and Agrochemistry (JSBBA)
The Society for Biotechnology, Japan (SBJ)
Protein Science Society of Japan (PSSJ)
The Japan Society of Calorimetry and Thermal Analysis (JSCTA)
# Organizing Committee

**Chairperson:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
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<tr>
<td>Kazuyuki Akasaka</td>
<td>Kinki Univ., Japan</td>
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**Local Committee:**

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<th>Name</th>
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<tr>
<td>Hitoshi Matsuki</td>
<td>The Univ. of Tokushima, Japan</td>
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<td>Fumiyoshi Abe</td>
<td>Aoyama Gakuin Univ., Japan</td>
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<td>Chiaki Kato</td>
<td>JAMSTEC, Japan</td>
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<td>Minoru Kato</td>
<td>Ritsumeikan Univ., Japan</td>
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<td>Hitoshi Iwahashi</td>
<td>Gifu Univ., Japan</td>
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<td>Tadayuki Nishiumi</td>
<td>Niigata Univ., Japan</td>
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<td>Kazutaka Yamamoto</td>
<td>NFRI, NARO, Japan</td>
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<td>Masayuki Oda</td>
<td>Kyoto Pref. Univ., Japan</td>
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**Secretary:**

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<tr>
<td>Ryo Kitahara</td>
<td>Ritsumeikan Univ., Japan</td>
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<td>Akihiro Maeno</td>
<td>Kinki Univ., Japan</td>
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<td>Yoshihisa Suzuki</td>
<td>The Univ. of Tokushima, Japan</td>
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<td>Nobutake Tamai</td>
<td>The Univ. of Tokushima, Japan</td>
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<td>Masaki Goto</td>
<td>The Univ. of Tokushima, Japan</td>
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**Scientific Advisory Board:**

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<tr>
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<td>Douglas Bartlett</td>
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<td>Chiaki Kato</td>
<td>JAMSTEC, Japan</td>
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<td>Catherine Royer</td>
<td>INSERM, France</td>
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<td>Rudi F. Vogel</td>
<td>TU München, Germany</td>
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<td>Roland Winter</td>
<td>Univ. of Dortmund, Germany</td>
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<td>Kazutaka Yamamoto</td>
<td>NFRI, NARO, Japan</td>
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<td>Jerson L. Silva</td>
<td>UFRJ, Brazil</td>
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General Information

Conference Venue: Large conference room (3rd floor) in Piazza Ohmi

Registration: Registration desk will be open during the following hours:
- October 29, Monday: 16:00 – 19:00, Otsu Old Public Hall
- October 30, Tuesday: 8:30 – 17:30, Piazza Ohmi
- October 31, Wednesday: 8:30 – 17:30, Piazza Ohmi
- November 1, Thursday: 8:30 – 12:00, Piazza Ohmi
- November 2, Friday: 8:30 – 12:00, Piazza Ohmi

Conference Name Badge: All participants are required to put on the official conference name badge at all times while in the conference venue.

Welcome Reception: October 29, Monday, 18:00 – 20:30, Large hall at 3rd floor in Otsu Old Public Hall

Excursion: November 1, Thursday, 13:30 – 18:00, Kyoto (Higashiyama area)

Banquet: November 1, Thursday, 18:00 – 21:00, Hotel Koyo (JP-style banquet)

Meals and Refreshments: A comprehensive restaurant guide near the conference venue is included in a conference bag for those wishing to enjoy lunch and dinner in Otsu. Coffee and light snacks will be served for all participants during the Poster Session & Coffee Break.

Exhibition: Commercial exhibition will be held at the lobby of large conference room from October 30 to November 2.
- Echigo Seika Co., Ltd.
- Syn Corporation Co., Ltd.
- Ikeda Scientific Co., Ltd.
- Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
**Instruction for Oral Presentations:** For your presentation, you can bring your own laptop computer or use equipped PC, installing PowerPoint for Windows. If you use the equipped computer, please bring the electronic file of your presentation in a USB flash memory. All speakers are requested to contact the Speaker’s Desk in the large conference room before the start of your session.

Presenting allotted time is as follows,

- **Keynote talks:** 30 min including discussion and change of speakers
- **Contributed talks:** 15 min including discussion and change of speakers
- **Student session’s talk:** 12 min including discussion and change of speakers

Speakers are kindly asked to keep the time of their presentations.

**Instruction for Poster Presentations:** Poster should be mounted at a 305 meeting room on October 30 and removed on November 2. Poster boards will be moved to the conference room during each poster session time. Presenters are requested to be present at their posters during their sessions. All presenters are responsible for putting up and removing their own posters. Pushpins and tapes are provided.

**Special Issue of High Pressure Research:** Selected papers presented at the conference will be published as regular papers, not as conference proceedings papers, in the journal in Taylor & Francis group "High Pressure Research (HPR)". They shall be submitted online directly to the Journal, a regular refereeing process applies, and the strict deadline of submission must be respected to guarantee publication with the shortest delay after the conference.

**Manuscript Deadline: November 30, 2012**

Only original papers of high quality, which are well written with sufficient novel material, will be considered for publication. Overviews of work done in the past, progress reports, and work published already in a similar form will not be considered. All submitted papers will be reviewed rigorously by at least two referees. The manuscripts will be screened upon submission and the Journal Editors reserve the right to reject a manuscript outright if these conditions are not met. The final decision on the acceptability of any submitted article will be made by the Editors.
## Conference Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Oct. 29 (Mon)</th>
<th>Oct. 30 (Tue)</th>
<th>Oct. 31 (Wed)</th>
<th>Nov. 1 (Thu)</th>
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<tr>
<td>9:00</td>
<td>Opening</td>
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<tr>
<td>10:00</td>
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<td>Session 1</td>
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<td>Session 6</td>
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<td>11:00</td>
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<td>Poster 1 &amp;</td>
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<td>Session 2</td>
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<td>Excursion</td>
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<td>Poster 2 &amp;</td>
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<td>Coffee Break</td>
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<td>17:00</td>
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<td>Welcome Party</td>
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<td>Banquet</td>
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Welcome Address

Welcome to our Lake City Otsu. The lake, along with its surrounding nature, has been deeply involved in Japanese history and culture. I hope you will enjoy at least part of it during your stay.

A century has passed since the first observation of coagulation of egg white by pressure (Bridgman 1914). Since then, the protein interior under pressure has long been in “black box”, but, now after a century, it has become partly “transparent”, in some cases in atomic detail, allowing us to discuss how proteins would behave under pressure.

We start the meeting with Session 1, in which we challenge this long-cherished question, how and why proteins change their structures and properties rather drastically under pressure. Specifically, we ask why pressure unfolds and denatures proteins and why pressure alters their subtle structures, causing changes in function, cell physiology, and deep sea adaptation as well as promising pasteurization and food quality improvement, which are major subjects to be discussed in this meeting in Sessions 2-6. Along with proteins, changes in membranes, polysaccharides and DNA structures are other essential factors responsible for the biochemical phenomena described above.

I request all the speakers to be prepared to speak for all the participants from all different disciplines in as much as understandable language and all the participants to fully utilize this precious opportunity that mixes basics and applications, methods and targets, for your future goals in science and technology.

On behalf of the organizing committee

Kazuyuki Akasaka
Chair of HPBB 2012
Tuesday, October 30, 2012

8:45 Opening and introductory lecture
Kazuyuki Akasaka
Kinki University, Japan

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Basics of pressure effects on bio-macromolecules</th>
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<tr>
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<td>Session chairs: Kunitsugu Soda and Ryo Kitahara</td>
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</tbody>
</table>
| 9:00 L1-01 | **Keynote Lecture**  
How does a protein denature under pressure after all?  
Tigran V. Chalikian  
University of Toronto, Canada |
| 9:30 L1-02 | Partial molar volume of L-valine in water under high pressure  
Seiji Sawamura  
Ritsumeikan University, Japan |
| 9:45 L1-03 | **Keynote Lecture**  
Hydration effects on structural transition of proteins by pressure  
Kunitsugu Soda, Yudai Shimbo, Yasutaka Seki and Makoto Taiji  
RIKEN, Japan |
| 10:15 L1-04 | The molecular mechanism of the pressure denaturation of protein clarified by the 3D-RISM theory  
Fumio Hirata  
Ritsumeikan University, Japan |
| 10:30 | **Poster session I (P1-01 – P1-11)** |
| 11:15 L1-05 | **Keynote Lecture**  
Functional substates of proteins investigated by high pressure NMR spectroscopy  
Hans Robert Kalbitzer  
University of Regensburg, Germany |
| 11:45 L1-06 | Macromolecular crystallography at high pressures  
Paul Urayama  
Miami University, USA |
| 12:00 L1-07 | Crucial roles of cavity in the conformational fluctuation of protein: T4 lysozyme  
Akihiro Maeno, Ryo Kitahara, Shigeyuki Yokoyama, F. W. Dahlquist, F. A. A. Mulder and Kazuyuki Akasaka  
Kinki University, Japan |
| 12:15 L1-08 | Cavity-dependent dynamics of c-Myb DNA-Binding domain: A study by high-pressure NMR and fluorescence spectroscopy  
Satomi Inaba, Akihiro Maeno, Kenji Kanaori, Kazuyuki Akasaka and Masayuki Oda  
Kyoto Prefectural University, Japan |

Lunch break (12:30 – 14:00)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
</table>
| 14:00 | L1-09    | **Keynote Lecture**  
Effects of mechanical stress on mechanosensitive channels and cytoskeletons in human cells | Hitoshi Tatsumi  
Nagoya University Graduate School of medicine, Japan |
| 14:30 | L1-10    | Mechanobiology uncovered by single molecule force spectroscopy      | Masaru Kawakami  
Japan Advanced Institute of Science and Technology, Japan |
| 14:45 | L1-11    | Pressure and heat induced structural changes of bacteriorhodopsin as studied by fast magic angle spinning solid state NMR | Akira Naito, Miyako Horigome, Arisa Shigeta, Hirohide Nishikawa, Kana Tajima, Izuru Kawamura, Satoru Tuzi, Kazushi Okitsu and Akimori Wada  
Yokohama National University, Japan |
| 15:00 | L1-12    | Pressure-induced chemical shifts as probes for conformational fluctuations in proteins | Ryo Kitahara, Kazumi Hata, Hua Li, Michael P. Williamson and Kazuyuki Akasaka  
Ritsumeikan University, Japan |
University of Toronto, Canada |
| 15:30 |          | **Poster session 2 (P1-12 – P1-22)**                                 |                                                                                                |
| 16:15 | L1-14    | **Keynote Lecture**  
High pressure processing (HPP) strategies on polyphenolic bioactives and shelf life stability in foods and beverages | Özlüm Toksoğlu  
Celal Bayar University, Turkey |
| 16:45 | L1-15    | Effect of high hydrostatic pressure and subsequent preservation on the antioxidant activities of agricultural products | Toru Shigematsu, Kanako Nakajima, Kazuyo Inagaki, Tomoki Kawamura, Masaki Nakamura, Mayumi Hayashi, Shinnosuke Kumakura, Akinori Iguchi, Masao Hirayama, Shigeaki Ueno and Tomoyuki Fujii  
Niigata University of Pharmacy and Applied Life Sciences, Japan |
| 17:00 | L1-16    | Effect of high hydrostatic pressure and NaHCO₃ on physical and chemical properties of pork ham | Yun-Jung Kim, Tadayuki Nishiumi, Hiro Ogoshi and Atsushi Suzuki  
Niigata University, Japan |
17:15  L1-17  Structural integrity design of high pressure food processing system by using the concept of system safety
Yuichi Otsuka, Jumpei Fujii, Murugesan Jayaprakash, Masaki Takatoh and Yoshiharu Mutoh
Nagaoka University of Technology, Japan

17:30  L1-18  Protein – sugar conjugation kinetics under combined high pressure and heat
Roman Buckow, Johannes Wendorff and Yacine Hemar
CSIRO, Australia

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**Poster session 1  (10:30 – 11:15)**

P1-01  Partial molar volume of L-valine in water under high pressure
Seiji Sawamura
Ritsumeikan University, Japan

P1-02  Pressure effect on the reorientational correlation time of water in N,N-dimethylformamide-water mixtures at 25 °C
Masaki Okada, Kazuyasu Ibuki and Masakatsu Ueno
Doshisha University, Japan

P1-03  Pressure effect on the secondary structure of β-hairpin model peptides: mutants of GB1 (41-56)
Keita Tsuchiya, Keisuke Fujimura and Minoru Kato
Ritsumeikan University, Japan

P1-04  Pressure denaturation of alanine dipeptide and chignolin studied by multibaric-multithermal molecular dynamics simulations
Hisashi Okumura
Institute for Molecular Science, Japan

P1-05  Interaction between short peptide and GdnHCl under high pressure
Takahiro Takekiyo and Yukihiro Yoshimura
National Defense Academy, Japan

P1-06  Volume changes of proteins adsorbed at silica particles
Juny Koo and Claus Czeslik
TU Dortmund University, Germany

P1-07  Solution structure of high Gibbs free energy state of ubiquitin
Soichiro Kitazawa, Tomoshi Kameda, Maho Yagi-Utsumi, Kenji Sugase, Nicky Baxter, Koichi Kato, Michael P. Williamson and Ryo Kitahara
Ritsumeikan University, Japan

P1-08  Thermodynamic characterization of allergenic proteins: hen egg Ovomucoid
Akihiro Maeno, Hiroshi Matsuo, Harumi Fukada, Sumiko Odaini and Kazuyuki Akasaka
Kinki University, Japan
P1-09  Pressure enhanced starch saccharification by glucoamylase from *Aspergillus niger*
*Roman Buckow*, Volker Heinz and Dietrich Knorr
CSIRO, Australia

P1-10  Pressure-temperature energy landscape of ubiquitin
*Tsubasa Yamamoto* and Minoru Kato
Ritsumeikan University, Japan

P1-11  A molecular dynamics simulation study at high pressure: Evaluation of mobility of water molecules around c-Myb protein
*Takuya Sogabe*, Hisashi Yoshida and Kazuyuki Akasaka
Kinki University, Japan

**Poster session 2  (15:30 – 16:15)**

P1-12  Pressure perturbation of intervesicle transfer of lipidated Ras proteins
*Shobhna Kapoor* and Roland Winter
TU Dortmund University, Germany

P1-13  Pressure-induced hemolysis is enhanced by inhibition of water transport via aquaporin-I in human erythrocytes
*Takeo Yamaguchi*, Shin Miyauchi and Yasuyuki Isahara
Fukuoka University, Japan

P1-14  Application of high-pressure refolding for structural genomic studies
*L.S. Lemke, R.M. Chura-Chambi, N.V. Malavasi, J.R.R. Cussiol, L.E.S. Netto and Ligia Morganti*
Universidade de São Paulo, Brazil

P1-15  Refolding at high pressure of the tegument protein Sm29 of *Schistosoma mansoni* and its application as a vaccine
*Rosa Maria Chura-Chambi, E. Nakajima, E.A. L. Martins and L. Morganti*
IPEN-CNEN/SP, Brazil

P1-16  High pressure can promote enzymatic hydrolysis of allergenic proteins in egg white to reduce IgE-binding activity
*Mari Watanabe*, Takashi Hara, Tadayuki Nishiumi, Toshio Joh and Atsushi Suzuki
Niigata Industrial Creation Organization, Japan

P1-17  Mutagenicity of high-pressurized pork, rice flour, and egg white
*Yoshiaki Kasai*, Yun Jung Kim, Kaneto Kobayashi, Masafumi Saito, Tadayuki Nishiumi, Hiroshi Nishida, Toru Shigematsu, Mari Watanabe, Takashi Hara, Tetsuya Konishi and Hiroshi Urakami
Niigata Industrial Creation Organization, Japan

P1-18  Improvement of texture and palatability of pork cutlet on high pressure
*Yun-Jung Kim*, Tadayuki Nishiumi, Hiro Ogoshi and Atsushi Suzuki
Niigata University, Japan
PI-19  High pressure processing effects on guaiacol formation by *Alicyclobacillus* spp. from phenolic ferulic and vanillic acids in fruit juices, in fruity drinks  
Özlem Toküşoğlu and Kazutaka Yamamoto  
Celal Bayar University, Turkey

PI-20  The role of divalent cations in the high pressure resistance of *Clostridium botulinum* type E endospores  
Christian A. Lenz, Juliane Schnabel and Rudi F. Vogel  
Technische Universität München, Germany

PI-21  Development of automated benchtop dynamic pressure generator platform for biological sample preparation, high pressure perturbation of protein structure, and other applications of hydrostatic pressure  
Alexander Lazarev, Timothy Straub, James Behnke, Vera Gross, Greta Carlson and Edmund Y. Ting  
Pressure BioSciences. Inc., USA

PI-22  Risk assessment and certification process toward ISO safety codes in design and manufacturing stages of a high pressure food processor  
Jumpei Fujii, Takabumi Fukada, Yuji Hirao, Yuichi Otsuka and Yoshiharu Mutoh  
Nagaoka University of Technology, Japan
Wednesday, October 31, 2012

**Session 3  Pressure adaptation**

Session chairs: Fumiyoshi Abe and Philippe Oger

### 8:45 L2-01  Keynote Lecture
Membrane homeoviscous adaptation in the archeon *T. barophilus* requires the regulation of unsaturation of accessory but not core lipids  
Anaïs Cario, Vincent Grossi, Philippe Schaeffer, Philippe Oger  
Ecole Normale Supérieure de Lyon, France

### 9:15 L2-02  Genomic features of thermo-piezophiles
Mohamed Jebbar, Pauline Vannier, Grégoire Michoud, Viggo Marteinsson, Phil Oger, Xiang Xiao and Xu Jun  
Université Bretagne Occidentale, France

### 9:30 L2-03  Mutation on a surface loop alters the key dynamics and function – a molecular mechanism of adaptation in deep-sea DHFR  
Kazuyuki Akasaka, Akihiro Maeno, P. N. Sunikumar, Yuji Wada, Eiji Ohmae, Kunihiko Gekko and Shin-ichi Tate  
Kinki University, Japan

### 9:45 L2-04  Effects of pressure, temperature and salinity on metabolic activity of anaerobic strains
Vanessa Barsotti, Sébastien Dupraz, Catherine Joulian, Fabienne Battaglia-Brunet, Claire Sergeant, Bernard Ollivier and Francis Garrido  
BRGM, France

### 10:00 L2-05  Effects of high hydrostatic pressure on the dynamic membrane property in deep-sea piezophiles
Fumiyoshi Abe  
Aoyama Gakuin University, Japan

### 10:15 L2-06  Effect of elevated hydrostatic pressure on the growth of fungi: A proteomic view
Samir Damare and Akhila Krishnaswamy  
CSIR-National Institute of Oceanography, India

### 10:30 Poster session 3  (P2-01 – P2-08)

### 11:15 L2-07  Keynote Lecture
Analysis of the enzymes from the deep-sea piezophilic bacteria under pressure conditions  
Chiaki Kato, Takayoshi Sekiguchi, Yuki Hamajima, Chinatsu Zama, Takayuki Nagae and Nobuhisa Watanabe  
Japan Agency for Marine-Earth Science and Technology, Japan
11:45 L2-08 Thermodynamic and functional characteristics of deep-sea enzymes
Eiji Ohmae, Chiho Murakami, Shin-ichi Tate, Kunihiko Gekko, Kaoru Nakasone
Kazumi Hata, Kazuyuki Akasaka and Chiaki Kato
Hiroshima University, Japan

12:00 L2-09 Bacterial motility measured by a high-pressure microscope
Masayoshi Nishiyama and Yoshiyuki Sowa
Kyoto University, Japan

12:15 L2-10 Distortion of spores of moss Venturiella under ultra high pressure
Fumihisa Ono, N. Nishihira, M. Sougawa, Y. Hada, Y. Mori, K. Takarabe, M. Saigusa, Y.
Matsushima, D. Yamazaki, E. Ito and N. L. Saini
Okayama University of Science, Japan

Lunch break (12:30 – 14:00)

Session 4 High pressure food processing and safety
Session chairs: Hitoshi Iwahashi and Rudi F. Vogel

14:00 L2-11 Keynote Lecture
Where pasteurization meets sterilization: high pressure inactivation of Clostridium botulinum type E and implications for food safety
Christian A. Lenz, Juliane Schnabel, Kai Reineke, Dietrich Knorr and Rudi F. Vogel
Technische Universität München, Germany

14:30 L2-12 Biological reason why yeast is restored from temporal death after sub-lethal high pressure treatment - Primary damage -
Hitoshi Iwahashi
Gifu University, Japan

14:45 L2-13 High pressure germination mechanisms of Geobacillus stearothermophilus spores investigated by in and ex situ techniques
Erika Georget, Shobhna Kapoor, Roland Winter, Edwin Ananta, Volker Heinz and Alexander Mathys
German Institute of Food Technologies, Germany

15:00 L2-14 Use of high pressure to improve storage quality of fresh-cut produce
Hidemi Izumi, Megumi Ishimaru and Hiroshi Matsuo
Kinki University, Japan

15:15 L2-15 Correlation of MALDI-TOF MS patterns and high pressure resistance of Clostridium botulinum type E endospores
Juliane Schnabel, Christian A. Lenz, Julia Usbeck, Carola Kern, Jürgen Behr and Rudi F. Vogel
Technische Universität München, Germany

15:30 Poster session 4 (P2-09 – P2-18)
16:15  L2-16  **Keynote Lecture**  
Trends in high pressure food processing in Japan and food safety perspective  
*Kazutaka Yamamoto*  
National Agriculture and Food Research Organization, Japan

16:45  L2-17  Commercial developments of high pressure processing of food  
*Carole Tonello*  
Hiperbaric, Spain

17:00  L2-18  Improvement of cooked sorghum protein digestibility by high pressure  
*Isabel Correia, Alexandra Nunes, Jorge A. Saraiva, António S. Barros and Ivonne Delgadillo*  
Universidade de Aveiro, Portugal

17:15  L2-19  Optical in-situ detection of high pressure dependence of pH value  
*Cornelia Rauh, Martin Nagel, Andreas Wierschem and Antonio Delgado*  
Friedrich-Alexander University Erlangen-Nuremberg, Germany

17:30  L2-20  Modelling of phase change and gelification of high-molecular weight substances  
*Cornelia Rauh, Martin Nagel and Antonio Delgado*  
Friedrich-Alexander University Erlangen-Nuremberg, Germany

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**Poster session 3  (10:30 – 11:15)**

**P2-01**  Analysis of the genes encoded lipolytic enzymes from bio-plastic degrading piezophilic bacterium, *Moritella* sp. JT01  
*Chinatsu Zama, Takayoshi Sekiguchi, Asuka Fujioka, Makiko Enoki, Haruyuki Kanehiro and Chiaki Kato*  
Tokyo University for Marine Science and Technology, Japan

**P2-02**  The effects of the mutations in 3-isopropylmalate dehydrogenase activity from the non piezophilic *Shewanella* strain, under pressure conditions  
*Yuki Hamajima, Takayuki Nagae, Nobuhisa Watanabe, Yasuyuki Kato-Yamada, Takeo Imai and Chiaki Kato*  
Rikkyo University, Japan

**P2-03**  Study of differential protein expression of germinating fungal spores under simulated deep-sea condition  
*Akhila Krishnaswamy and Samir Damare*  
CSIR-National Institute of Oceanography, India

**P2-04**  Water penetration and pressure adaptation of 3-isopropylmalate dehydrogenase revealed by high-pressure protein crystallography  
*Takayuki Nagae, Yuki Hamajima, Takashi Kawamura, Ken Niwa, Masashi Hasegawa, Chiaki Kato and Nobuhisa Watanabe*  
Nagoya University, Japan
P2-05 Effect of hydrostatic pressure on viability and function of non-adherent HL-60 cells
Takahiro Yabuki, Banri Yamanoha and Akio Shimizu
Soka University, Japan

P2-06 Effect of pressurization on viability and function of adherent A172 cells
Ryo Yasuhara, Ryo Kushida, Shiwori Ishii, Banri Yamanoha and Akio Shimizu
Soka University, Japan

P2-07 Effect of high-pressure gases on the growth of *Escherichia coli* determined by microcalorimetry
Satoshi Kawachi, Yoshihisa Suzuki, Yasuhiro Uosaki and Katsuhiro Tamura
The University of Tokushima, Japan

P2-08 Structural changes of G-quartet at high hydrostatic pressure
Takahiro Sugie, Yuko Ide, Akihiro Maeno, Kazuyuki Akasaka and Kenji Kanaori
Kyoto Institute of Technology, Japan

Poster session 4  (15:30 – 16:15)

P2-09 Effect of antioxidants and high-pressure thermal treatment on the retention of conjugated linoleic acid (CLA) in milk
Sergio I. Martínez-Monteagudo and M. D.A. Saldaña
University of Alberta, Canada

P2-10 Kinetics of conjugated linoleic acid (CLA) degradation in milk treated with pressure-assisted thermal sterilization
Sergio I. Martínez-Monteagudo and M. D.A. Saldaña
University of Alberta, Canada

P2-11 Effect of high pressure treatment on the oxidation of meat proteins
C. Guyon, A. Chouët, A. Meynier and Marie de Lamballerie
ONIRIS, France

P2-12 Impact of isostatic and dynamic pressure on *Geobacillus stearothermophilus* bacterial spores germination and inactivation
Kemal Aganovic, Erika Georget, Edwin Ananta, Volker Heinz and Alexander Mathys
German Institute of Food Technologies, Germany

P2-13 Food constituents and food additives facilitate the inactivation of spores of *Clostridium sporogenes* by hydrostatic pressure
Takateru Ishimori, Katsutoshi Takahashi, Yuya Nakagawa, Shinya Naganuma, Yoshiaki Kasai, Yukifumi Konagaya, Hiroshi Batori, Atsushi Kobayashi and Hiroshi Urakami
Niigata University of Pharmacy and Applied Life Sciences, Japan

P2-14 Pressure-induced contraction of pork muscle fibers revealed by *in situ* microscopy
Frederique Duranton, R. Chéret, H. Simonin, S. Guillou and M. de Lamballerie
ONIRIS, France
P2-15 Enzymatic digestion of peanut allergens under high hydrostatic pressure
Keigo Masuyama, Kohji Yamaki, Eiichi Kitagawa and Kazutaka Yamamoto
Sonton Food Industry Co., Ltd., Japan

P2-16 Degradation kinetics of fish gelatin in hot-compressed water
Shigeaki Ueno, Jiahui Zhao, Hirokazu Ichinoi and Tomoyuki Fujii
Tohoku University, Japan

P2-17 High pressure processing (HPP) on freshness, shelf life of value-added meat (VAM) products
Tugce Aydoğdu and Özlem Tokuçoğlu
Celal Bayar University, Turkey

P2-18 Characteristics of bread and sponge cake using the ultra-fine rice flour
Shuji Chino, Miyuki Kido, Kaneto Kobayashi, Noriyuki Homma, Kazutaka Yamamoto and Toru Shigematsu
Niigata Agricultural Research Institute, Japan
### Thursday, November 1, 2012

**Session 5  Pressure effects on macromolecular assembly**

**Session chair:** Hitoshi Matsuki and Débora Foguel

<table>
<thead>
<tr>
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<th>Session</th>
<th>Title</th>
<th>Authors and Affiliations</th>
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</thead>
<tbody>
<tr>
<td>8:45</td>
<td>L3-01</td>
<td><strong>Keynote Lecture</strong> High pressure studies on amyloid oligomers and fibrils of PrP and Prion-like aggregates of mutant tumor suppressor p53</td>
<td>Jerson L. Silva and Débora Foguel, Universidade Federal do Rio de Janeiro, Brazil</td>
</tr>
<tr>
<td>9:15</td>
<td>L3-02</td>
<td>Putting pressure on amyloid proteins: the case of transthyretin</td>
<td>Débora Foguel, Estefania Azevedo, Priscila F. da Silva, Ricardo Santanna, Carolina A. Braga and Fernando Palhano, Universidade Federal do Rio de Janeiro, Brazil</td>
</tr>
<tr>
<td>9:30</td>
<td>L3-03</td>
<td><strong>Keynote Lecture</strong> The effects of crowding and osmolytes on the temperature-pressure stability and intermolecular interactions of proteins</td>
<td>Roland Winter, TU Dortmund University, Germany</td>
</tr>
<tr>
<td>10:00</td>
<td>L3-04</td>
<td>Complex pressure-temperature phase diagrams of ordered and disordered proteins. FTIR spectroscopy using a diamond anvil cell</td>
<td>Judit Somkuti and László Smeller, Semmelweis University, Hungary</td>
</tr>
<tr>
<td>10:15</td>
<td>L3-05</td>
<td>Analysis of oligomeric transition of silkworm small heat shock protein sHSP20.8 using high hydrostatic pressure native PAGE</td>
<td>Tetsuro Fujisawa, Toshifumi Ueda, Keiichi Kameyama, Yoichi Aso and Ryo Ishiguro, Gifu University, Japan</td>
</tr>
<tr>
<td>10:30</td>
<td>Poster session 5 (P3-01 – P3-06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:15</td>
<td>L3-06</td>
<td>The effect of pressure on the conformation of model peptides of α-helix and β-hairpin: An Insight into the pressure unfolding of proteins</td>
<td>Minoru Kato and Hiroshi Imamura, Ritsumeikan University, Japan</td>
</tr>
<tr>
<td>11:30</td>
<td>L3-07</td>
<td>Effects of pressure on the adsorption of proteins at aqueous-solid interfaces</td>
<td>Juny Koo and Claus Czeslik, TU Dortmund University, Germany</td>
</tr>
<tr>
<td>11:45</td>
<td>L3-08</td>
<td>How do membranes response by applying high hydrostatic pressure?</td>
<td>Hitoshi Matsuki, Masaki Goto and Nobutake Tamai, The University of Tokushima, Japan</td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
<td>Title</td>
<td>Presenters</td>
</tr>
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<tr>
<td>12:00</td>
<td>L3-09</td>
<td>An attempt to determine the viscoelastic properties of phospholipid bilayer membranes</td>
<td>Nobutake Tamai, Sayuri Kakibe, Saeko Tanaka, Masaki Goto and Hitoshi Matsuki</td>
</tr>
<tr>
<td>12:15</td>
<td>L3-10</td>
<td>Membrane properties of bacterial endospores at high temperature and high pressure: Probing membrane properties with LAURDAN, nisin, and reutericyclin</td>
<td>Michael G. Gänzle, Simmon Hofstetter, Lynn McMullen and Roland Winter</td>
</tr>
</tbody>
</table>

Lunch break (12:30 – 13:30)

13:30 | Excursion (Kyoto (Higashiyam area), etc.) |

18:00 | Banquet (Hotel Koyo) |

**Poster session 5 (10:30 – 11:15)**

P3-01 Pressure as a tool to dissociate amyloid fibrils in wild-type hen lysozyme | Buddha R. Shah, Akihiro Maeno, Hiroshi Matsuo, Hideki Tachibana and Kazuyuki Akasaka | Kinki University, Japan |
| P3-02 Effects of mucopolysaccharide on the rheology and microstructure of a pressure-induced whey protein gel | Jin-Song He, Tai-Hua Mu, Songming Zhu, Norihiro Azuma and Choemon Kanno | Zhejiang University, China |
| P3-03 Theoretical analysis of α-actin stability at high pressure | Nobuhiko Wakai, Kazuhiro Takemura, Takami Morita and Akio Kitao | The University of Tokyo, Japan |
| P3-04 Is pressure-induced apoptosis suppressed by heat shock proteins? | Yosuke Uehara, Nobuyuki Irie, Yuuya Kobayashi and Takeo Yamaguchi | Fukuoka University, Japan |
| P3-05 Activation volume of crystallization of tetragonal lysozyme crystals | Takahisa Fujiwara, Gen Sazaki, Sin-ichiro Yanagiya and Yoshihisa Suzuki | The University of Tokushima, Japan |
| P3-06 High-pressure fluorometric study on the subgel-formation of phosphatidylcholine bilayer membrane | Masaki Goto, Agnieszka Wilk, Shirish Chodankar, Nobutake Tamai, Joachim Kohlbrecher and Hitoshi Matsuki | The University of Tokushima, Japan |
Friday, November 2, 2012

**Session 6  Session for students and young researchers**
Session chairs: Jerson L. Silva, Yun-Jung Kim and Masayuki Oda

<table>
<thead>
<tr>
<th>Time</th>
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<th>Authors</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>Introduction</td>
<td>Hitoshi Iwahashi</td>
<td>Gifu University, Japan</td>
<td></td>
</tr>
<tr>
<td>9:05</td>
<td>L4-01</td>
<td>The development of liquid feeding with petit-high pressure carbon dioxide gas pasteurization</td>
<td>Katsumi Hachisuka, Kazuki Nomura, Shiori Waki and Hitoshi Iwahashi</td>
<td>Gifu University, Japan</td>
</tr>
<tr>
<td>9:17</td>
<td>L4-02</td>
<td>High hydrostatic pressure is effective to <em>in vitro</em> digestibility of ovalbumin</td>
<td>Hiroki Tachikawa, Yun-Jung Kim, Atsushi Suzuki and Tadayuki Nishiumi</td>
<td>Niigata University, Japan</td>
</tr>
<tr>
<td>9:29</td>
<td>L4-03</td>
<td>The effect of high pressure on the morphology of polymers – a raman spectroscopic study</td>
<td>Julia Sterr, Benedikt Stefan Fleckenstein and Horst-Christian Langowski</td>
<td>Technische Universität München, Germany</td>
</tr>
<tr>
<td>9:41</td>
<td>L4-04</td>
<td>Proposal of preparation protocols for indicator microorganisms aimed to standardizing high-pressure processing technology</td>
<td>Liyuan Niu, Kazuki Nomura, Hitoshi Iwahashi, Kaoru Obuchi, Mariko Kawamura, Atsushi Kobayashi, Akira Yamasaki, Hiroshi Batori, Yoshikai Kasai and Hiroshi Urakami</td>
<td>Gifu University, Japan</td>
</tr>
<tr>
<td>9:53</td>
<td>L4-05</td>
<td>A comparative study between UHT and pressure-assisted thermal sterilization: oxidative stability of milk</td>
<td>Sergio I. Martinez-Monteagudo and M. D. A. Saldaña</td>
<td>University of Alberta, Canada</td>
</tr>
</tbody>
</table>

**10:05**  Poster session 6  (P4-01 – P4-06)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
</tr>
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<tr>
<td>10:50</td>
<td>L4-06</td>
<td>Clarification of the recovery mechanism after hydrostatic pressure treatment in <em>Escherichia coli</em></td>
<td>Shuto Ohshima, Kazuki Nomura and Hitoshi Iwahashi</td>
<td>Gifu University, Japan</td>
</tr>
<tr>
<td>11:02</td>
<td>L4-07</td>
<td>A scanning fluorescence spectroscopy of decorin under high pressure</td>
<td>Takahito Komoda, Yun-Jung Kim, Atsushi Suzuki and Tadayuki Nishiumi</td>
<td>Niigata University, Japan</td>
</tr>
<tr>
<td>11:14</td>
<td>L4-08</td>
<td>Barosensitivity of <em>Saccharomyces cerevisiae</em> for fermentation control</td>
<td>Kazuki Nomura, Hitoshi Iwahashi, Akinori Iguchi and Toru Shigematsu</td>
<td>Gifu University, Japan</td>
</tr>
</tbody>
</table>
11:26  L4-09  Effect of high hydrostatic pressure and sodium hydrogen carbonate on physical properties and color of beef
Shun Ohnuma, Yun-Jung Kim, Yumi Watanabe, Atsushi Suzuki and Tadayuki Nishiumi
Niigata University, Japan

11:38  L4-10  Effect of high hydrostatic pressure and NaHCO₃ treatment on texture and palatability of chicken breast
Kanae Tabe, Yun-Jung Kim, Shun Onuma, Hiro Ogoshi, Atsushi Suzuki and Tadayuki Nishiumi
Niigata University, Japan

11:50  L4-11  The effect of carbon dioxide to yeast Saccharomyces cerevisiae
Shiori Waki, Yoshihiko Hachisuka, Kazuki Nomura, Hitoshi Iwahashi, Hiroyuki Matsuoka, Satoshi Kawachi, Yoshihisa Suzuki and Katsuhiro Tamura
Gifu University, Japan

12:05  Award ceremony for the best presenter in Session 6

12:10  Closing remarks

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**Poster session 6  (10:05 – 10:50)**

P4-01  Possibility of protein preserving solvent under high pressure conditions
Machiko Shigemi, Takahiro Takekiyo and Yukihiro Yoshimura
National Defense Academy, Japan

P4-02  Identification of plasmid pHRI as a major factor in heat and pressure resistance of E. coli AW1.7
Gerard Bédié, Y. Liu, P. Miller, L.F. Ruan, L. McMullen and M.G. Gänzle
University of Alberta, Canada

P4-03  Influence of osmotic and cation stresses on high-pressure inactivation of Escherichia coli
Toshimi Hasegawa, Takuya Nakamura, Mayumi Hayashi, Miyuki Kido, Masao Hirayama, Toshio Yamaguchi, Akinori Iguchi, Shigeaki Ueno, Toru Shigematsu and Tomoyuki Fujii
Niigata University of Pharmacy and Applied Life Sciences, Japan

P4-04  Importance of cell-damage causing growth delay for high-pressure inactivation of Saccharomyces cerevisiae
Masaru Nanba, Kazuki Nomura, Yusuke Nasuhara, Manabu Hayashi, Miyuki Kido, Mayumi Hayashi, Akinori Iguchi, Toru Shigematsu, Masao Hirayama, Shigeaki Ueno and Tomoyuki Fujii
Niigata University of Pharmacy and Applied Life Sciences, Japan

P4-05  Ultra-fine rice flour by high hydrostatic pressure technology
Miyuki Kido, Kaneto Kobayashi, Shuji Chino, Toshikazu Nishiwaki, Noriyuki Homma, Kazutaka Yamamoto and Toru Shigematsu
Niigata Industrial Creation Organization, Japan
Sterilization of satsuma mandarin juice by oxygen-nitrogen gas hybrid pressurization
Yuki Miyachi, Satoshi Kawachi, Yoshihisa Suzuki, Yasuhiro Uosaki and Katsuhiro Tamura
The University of Tokushima, Japan
Abe, Fumiyoshi
Aoyama Gakuin University, Japan
Japan Agency for Marine-Earth Science and Technology, Japan

Akasaka, Kazuyuki
Kinki University, Japan

Akhila, Krishnaswamy
CSIR-National Institute of Oceanography, India

Atsuda, Eri
Ritsumeikan University, Japan

Bédié, Gerard
University of Alberta, Canada

Buckow, Roman
CSIRO Animal, Australia

Chalikian, Tigran V.
University of Toronto, Canada

Chino, Shuji
Niigata Industrial Creation Organization, Japan
Niigata Agricultural Research Institute, Japan

Chura-Chambi, R.M.
Instituto de Pesquisas Energéticas e Nucleares – IPEN – CNEN/SP, Brazil

Czeslik, Claus
TU Dortmund University, Germany

Damare, Samir R.
CSIR-National Institute of Oceanography, India

De Lamballerie, Marie
ONIRIS GEPEA, France

Delgado, Antonio
Friedrich-Alexander University Erlangen-Nuremberg, Germany

Dupraz, Sébastien
BRGM, France

Duranton, Frédérique
ONIRIS GEPEA, France
CTCPA, France

Foguel, Débora
Universidade Federal do Rio de Janeiro, Brazil

Fujii, Jumpei
Nagaoka University of Technology, Japan
Niigata Industrial Creation Organization, Japan

Fujisawa, Tetsuro
Gifu University, Japan
RIKEN, SPring-8 center, Japan

Fujiwara, Takahisa
The University of Tokushima, Japan

Fukao, Hiroaki
Ritsumeikan University, Japan

Gänzle, Michael G.
University of Alberta, Canada

Georget, Erika
German Institute of Food Technologies, Germany

Goto, Masaki
The University of Tokushima, Japan

Gross, Vera
Pressure BioSciences, Inc., USA

Hachisuka, Katsuhiko
Gifu University, Japan

Hamajima, Yuki
Rikkyo University, Japan
Japan Agency for Marine-Earth Science and Technology, Japan

Hasegawa, Toshimi
Niigata University of Pharmacy and Applied Life Sciences, Japan

He, Jin-Song
Zhejiang University, China
Utsunomiya University, Japan

Heinz, Volker
German Institute of Food Technologies, Germany
Hirata, Fumio, Ritsumeikan University, Japan
Iguchi, Akinori, Niigata University of Pharmacy and Applied Life Sciences, Japan
Inaba, Satomi, Kyoto Prefectual University, Japan
Ishimori, Takateru, Niigata University of Pharmacy and Applied Life Sciences, Japan
Iwahashi, Hitoshi, Gifu University, Japan
Izumi, Hidemi, Kinki University, Japan
Jebbar, Mohamed, Université Bretagne Occidentale, CNRS, Ifremer, IUEM, France
Kalbitzer, Hans Robert, University of Regensburg, Germany
Kanaori, Kenji, Kyoto Institute of Technology, Japan
Kapoor, Shobhna, TU Dortmund University, Germany
Kasai, Yoshiaki, Niigata Industrial Creation Organization, Japan
Kato, Minoru, Ritsumeikan University, Japan
Kato, Chiaki, Japan Agency for Marine-Earth Science and Technology, Japan
Kato, Masatoshi, Kobe Steel, LTD., Japan
Kawachi, Satoshi, The University of Tokushima, Japan
Kawakami, Masaru, Japan Advanced Institute of Science and Technology, Japan
Kido, Miyuki, Niigata Industrial Creation Organization, Japan
Kim, Yun-Jung, Niigata Industrial Creation Organization, Japan
Niigata University, Japan
Kitahara, Ryo, Ritsumeikan University, Japan
Kitazawa, Soichiro, Ritsumeikan University, Japan
Komoda, Takahito, Niigata University, Japan
Koo, Juny, TU Dortmund University, Germany
Koyama, Sumihiro, Japan Agency for Marine-Earth Science and Technology, Japan
Lazarev, Alexander, Pressure BioSciences, Inc., USA
Macgregor, Robert B., University of Toronto, Canada
Maeno, Akihiro, Kinki University, Japan
Martínez-Monteagudo, Sergio I. University of Alberta, Canada
Masuyama, Keigo, Sonton Food Industry, Japan
Matsuki, Hitoshi, The University of Tokushima, Japan
Miyauchi, Yuki, The University of Tokushima, Japan
Morganti, Ligia, Instituto de Biociências da Universidade de São Paulo, Brazil
Nagae, Takayuki, Nagoya University, Japan
Naito, Akira, Yokohama National University, Japan
Nanba, Masaru, Niigata University of Pharmacy and Applied Life Sciences, Japan
Nishiiumi, Tadayuki, Niigata University, Japan
Nishiyama, Masayoshi, Kyoto University, Japan
Niu, Liyuan     Gifu University, Japan
Nomura, Kazuki    Gifu University, Japan
Oda, Masayuki     Kyoto Prefectual University, Japan
Odani, Sumiko     Jumonji University, Japan
Oger, Philippe    Ecole Normale Supérieure de Lyon, France
Ohmae, Eiji       Hiroshima University, Japan
Ohnuma, Shun      Niigata University, Japan
Ohshima, Shuto    Gifu University, Japan
Okada, Masaki     Doshisha University, Japan
Okada, Yasuhiro   Sonton Food Industry, Japan
Okumura, Hisashi  Institute for Molecular Science, Japan
                        The Graduate University for Advanced Studies, Japan
Ono, Fumihisa      Okayama University of Science, Japan
Otsuka, Yuichi     Nagaoka University of Technology, Japan
Rauh, Cornelia     Friedrich-Alexander University Erlangen-Nuremberg, Germany
Saraiva, Jorge A.  Universidade de Aveiro, Portugal
Sawamura, Seiji    Ritsumeikan University, Japan
Schnabel, Juliane  Technische Universität München, Germany
Shah, Buddha R.    Kinki University, Japan
                        Nepal Academy of Science and Technology, Nepal
Shigematsu, Toru   Niigata University of Pharmacy and Applied Life Sciences, Japan
Shigemi, Machiko   National Defense Academy, Japan
Silva, Jerson L.   Universidade Federal do Rio de Janeiro, Brazil
Smeller, László    Semmelweis University, Hungary
Soda, Kunitsugu    RIKEN, Japan
Sokabe, Takuya     Kinki University, Japan
Sterr, Julia       Technische Universität München, Germany
Sugimoto, Naoki    Konan University, Japan
Sukenari, Yuki     Ritsumeikan University, Japan
Suzuki, Atsushi    Niigata University, Japan
Suzuki, Yoshihisa  The University of Tokushima, Japan
Tabe, Kanae        Niigata University, Japan
Tachikawa, Hiroki  Niigata University, Japan
Takekiyo, Takahiro National Defense Academy, Japan
Tamai, Nobutake    The University of Tokushima, Japan
Tatsumi, Hitoshi   Nagoya University, Japan
Tokuşoğlu, Özlem   Celal Bayar University, Turkey
Tonello, Carole       Hiperbaric, Spain
Tsuchiya, Keita      Ritsumeikan University, Japan
Tugce, Aydoğdu       Celal Bayar University, Turkey
Tsujii, Masanori     Ritsumeikan University, Japan
Uehara, Yosuke       Fukuoka University, Japan
Ueno, Shigeaki       Tohoku University, Japan
Ueno, Masakatsu      Doshisha University, Japan
Urayama, Paul        Miami University, USA
Vogel, Rudi F.       Technische Universität München, Germany
Wakai, Nobuhiko      The University of Tokyo, Japan
Waki, Shiori         Gifu University, Japan
Watanabe, Mari       Niigata Industrial Creation Organization, Japan
Winter, Roland       TU Dortmund University, Germany
Yabuki, Takahiro     Soka University, Japan
Yamaguchi, Takeo     Fukuoka University, Japan
Yamamoto, Kazutaka   National Food Research Institute, Japan
Yamamoto, Tsubasa    Ritsumeikan University, Japan
Yasuhiro, Ryo        Soka University, Japan
Yoshida, Hisashi     Kinki University, Japan
Yoshimura, Yukihiko  National Defense Academy, Japan
Zama, Chinatsu       Japan Agency for Marine-Earth Science and Technology, Japan
                                      Tokyo University for Marine Science and Technology, Japan