

シンポジウム 概要・演者一覧

●年会初日（11月25日（金）9:00-11:30, 16:30-19:00（一部延長予定））

1SAA

テーマ名	神経活動イメージングの最先端:新規ツールとその活用
	Advances in imaging neuronal activity: New tools and applications
オーガナイザー	ペアン クン(沖縄科学技術大学院大学)、富永 貴志(徳島文理大学)
概要	Functional optical imaging is revolutionizing neuroscience. Every year new molecular or optical tools are added or improved and allow to study the biophysics of biological processes which were not accessible before. This symposium gives a snapshot of some of these current developments. Experts from probe design and methods development as well as from the interface of methods development and neuroscience will report their latest results. The symposium focuses on voltage and calcium probe design and imaging, two-photon optogenetics and FRET/FLIM, molecular orientation imaging, and birefringence imaging.
演者	Bradley Baker (KIST)、中井 淳一(埼玉大学)、小池(谷)真紀(MBL)、岡本 賢一(Mount Sinai Hospital)、Bernd Kuhn(OIST)、富永 貴志(徳島文理大学)

1SBA

テーマ名	全細胞解析によるマイノリティ細胞の解明
	Minority cell research enabled by exhaustive analyses of all cells
オーガナイザー	永井 健治(大阪大学)、上田 泰己(東京大学)
概要	If we carefully observe the cell population that at first glance looks uniform and homogeneous, we may find small number of heterogeneous cells with a different nature. Moreover, this minority cells would sometimes significantly alter the behavior of the whole cell population. In this symposium, we would like to discuss not only analytical methods for sensitive detection or visualization of such minority cells, but also the theories regarding principle or mechanism how the minority cells are generated and exert biological roles.
演者	城口 克之(理化学研究所)、小松崎 民樹(北海道大学)、藤田 克昌(大阪大学)、清中 茂樹(京都大学)、西村 智(自治医科大学)、岡崎 拓(徳島大学)、永井 健治(大阪大学)、上田 泰己(東京大学)

1SDA

テーマ名	原子からいのちへ:21世紀の新しい生命観を求めて
	From atoms to life: Exploring a new view of life in the 21st century
オーガナイザー	赤坂 一之(京都府立大)、伏見 謙(総合研究大学院大学)
概要	Biomolecular science in the last century has revolutionized our approach to life: Today in biochemical and medical societies, crucial life phenomena are being discussed in terms of changes in macromolecular structures and interactions, and even of motions of individual atoms. How can the basically random thermal motions of atoms derive the macromolecular machinery into the dynamism of life? How in nature is the connection between atoms and life made generally possible? In this symposium, we intend to share our thoughts with the audience of all ages.
演者	赤坂 一之(京都府大)、伏見 謙(総合研究大学院大学)、美宅 成樹、曾我部 正博(名古屋大学)

1SEA

テーマ名	運動性鞭毛・繊毛の最前線 - 生体ナノマシンの制御機構 -
	Frontiers in motile cilia - regulatory mechanisms of bio-nanomachines -
オーガナイザー	小田 賢幸(山梨大学)、若林 憲一(東京工業大学)
概要	Cilia and flagella are conserved motile organelles that play essential roles in cellular motility of eukaryotes and development of higher organisms by generating fluid flow. The beating motion of cilia/flagella is driven by dyneins, whose activities are tightly regulated by complex molecular mechanisms. In this symposium, leading young scientists will present their recent findings regarding the ciliary/flagellar motility and its regulatory mechanisms in various model organisms.
演者	植木 紀子(東京工業大学)、久保 智広(山梨大学)、篠原 恭介(東京農工大学)、柴 小菊(筑波大学)、高尾 大輔(遺伝研)、山口 博史(東京大学)

1SFA

テーマ名	生物物理遺伝学:生物物理学的ゲノム情報科学としての
	Biophysical Genetics as a Genome Informatics Supported by Biophysics
オーガナイザー	中井 謙太(東京大学)、白井 剛(長浜バイオ大学)
概要	Since genetic information can be treated independently of the physical nature of its carrier DNA, the progress of genome information science has deviated to a certain extent from that of biophysics. The situation, however, has been changed recently because the importance of epigenome information, which is tightly linked with the 3D conformation of carrier DNA, i.e., the chromatin structure, has been recognized increasingly. Thus, in this symposium, we will celebrate the birth of a new field, biophysical genetics, inviting active researchers in it.
演者	徳田 直子(名古屋大学)、笹井 理生(名古屋大学)、胡桃坂 仁志(早稲田大学)、須山 幹太(九州大学)、VANDENBON Alexis(大阪大学)、和田 洋一郎(東京大学)、中田 庸一(東京大学)、大田 佳宏(東京大学)、井原 茂男(東京大学)

1SGA

テーマ名	蛋白質工学を用いた会合と溶解性の最新の研究
	Advances in the engineering of protein oligomerization and solubility
オーガナイザー	黒田 裕(東京農工大学)、赤沼 哲史(早稲田大学)
概要	Aggregation, oligomerization, and solubility are important issues in protein research. However, much of the present research on these phenomena focuses on amyloidogenic or crystalline aggregation. This workshop will introduce recent studies on amorphous protein aggregation, protein solubility, as well as the control and design of protein oligomers. We hope that it will provide an opportunity to decipher biophysical mechanisms governing these phenomena, and that it will shed insight into mechanisms that are common to amyloidogenic/crystalline aggregation and those that are not.
演者	赤沼 哲史(早稲田大学)、寺川(鈴木)まゆ(Weill Cornell Medicine)、新井 亮一(信州大学)、八木 創太(東京薬科大学)、黒田 裕(東京農工大学)、佐藤 大輔(創価大学)、城所 俊一(長岡技術科学大学)、有坂 文雄(日本大学)

1SAP

テーマ名	細胞同士の絡み合いから理解する集団運動の生物物理学
	Biophysics of collective cell movement – From single-cell to multi-cell dynamics
オーガナイザー	澤井 哲(東京大学)、青木 一洋(基礎生物学研究所)
概要	Collective cell movement forms the basis of morphogenesis, wound healing as well as cancer invasion. From what appears as random and variable traits that are specific to certain cell types and species, recent studies have uncovered some of the common elements that underlies the dynamics of cell shape, migration, cell-cell interactions and stemness. The symposium will focus on the dynamics that are highly coordinated between the cells and highlight the most recent and exciting progress by some of the younger scientists in this emerging field.
演者	澤井 哲(東京大学)、青木 一洋(基礎生物学研究所)、芳賀 永(北海道大学)、杉村 薫(京都大学)、難波 大輔(東京医科歯科大学)、榎本 篤(名古屋大学)

1SBP

テーマ名	モデル化と操作による高次生命現象の解明への挑戦
	Modeling and Manipulation of Life: a Challenge to Unveil Its Complex Mechanism
オーガナイザー	茅 元司(東京大学)、井上 尊生(ジョンズホプキンス大学)
概要	Measurements of molecular dynamics and decoding of genetic information have been progressively advanced and thus, provided a substantial amount of information in life science field. However, our biological system cannot be interpreted simply by superimposing individual functions revealed by these technologies. Rather, it is a complex system by cooperative interactions among cellular and molecular components. In this symposium, we focus on the constructive modeling approaches and experimental manipulations designed to unveil complex mechanisms of the biological events, such as cell division, blood vessel formation, cellular temperature control, immune reaction, and muscle contraction.
演者	杉本 亜砂子(東北大学)、佐藤 有紀(九州大学)、清光 智美(名古屋大学)、岡部 弘基(東京大学)、井上 尊生(ジョンズホプキンス大学)、茅 元司(東京大学)

1SCP

テーマ名	日中生物物理学会ジョイントシンポジウム: 蛋白質設計とバイオテクノロジーへの応用
	BSJ – BSC Joint Symposium: Protein Design and its Applications to Biotechnology
オーガナイザー	中村 春木(大阪大学)、Xiyun Yan(Institute of Biophysics)
概要	In order to make much deeper collaborations between BSJ (Biophysical Society of Japan) and BSC (Biophysical society of China) for promotion of biophysics in a global manner, we start a Joint Bilateral Symposium inviting active researchers from both BSJ and BSC side. This year we focus on the theme “Protein Design and its Applications to Biotechnology”, and both societies invite three speakers, respectively. It is expected to provide a scope on the future biophysics studies in Japan and China.
演者	Chu Wang(Peking University)、堀 雄一郎(大阪大学)、Sarah Perrett(Institute of Biophysics)、茶谷 絵理(神戸大学)、Xiyun Yan(Institute of Biophysics)、津本 浩平(東京大学)

1SDP

テーマ名	モーターと細胞骨格の新展開 ステップから集団運動まで
	New extremes of motor proteins and cytoskeleton: step into a new realm with steps and collective motions
オーガナイザー	西坂 崇之(学習院大学)、永井 健(北陸先端科学技術大学)
概要	Novel two directions of motor proteins and cytoskeletons will be presented in this session. One is the collective motions of condensed or regulated cytoskeletons in vivo or in vitro, both of which are characterized by biophysics, non-equilibrium physics and developmental biology. The other extreme is the exploration of the molecular mechanism of new machineries including rotary motors. Also, this symposium briefly represents Dr. Kazuhiko Kinoshita Jr's fruitful contribution in this field as its introduction, who passed away last November.
演者	木下 佳昭(学習院大学)、鹿毛 あずさ(東北大学)、進藤 麻子(名古屋大学)、岸川 淳一(京都産業大学)、渡邊 力也(東京大学)、永井 健(北陸先端科学技術大学院大学) Bausch, Andreas R.(Technische Universität München)

1SEP

テーマ名	時空間精密構造解析による生体分子活性サイトの機能解明
	Understanding biochemical functions of the active sites in biomolecular systems by spatial-temporal analysis
オーガナイザー	鷹野 優(広島市立大学)、久保 稔(理化学研究所)
概要	Biomolecules have a rich diversity of functional dynamics, from a large domain movement to a small local structural change. The latter dynamics includes a sub-angstrom change in the active site, which is crucial to control its electronic state and reactivity. Recent advances in crystallography, single-molecule imaging, spectroscopy, and computer simulation allow us to analyze the high-resolution structures, chemical properties, and complex dynamics of biomolecules, and to better understand the coupling between macroscopic and microscopic events. We discuss how these methods can describe the biochemical functions of the active sites.
演者	鷹野 優(広島市立大学)、久保 稔(理化学研究所)、関口 博史(高輝度光科学研究センター)、佐藤 文策(自治医科大学)、木村 哲就(神戸大学)、秋田 総理(岡山大学)

1SFP

テーマ名	細胞膜ナノ・メゾドメイン構造によるシグナル伝達の動的な制御機構
	Unraveling the regulation mechanisms of signal transduction in nano- and meso-scale domains in cell membranes
オーガナイザー	森垣 憲一(神戸大学)、鈴木 健一(京都大学)
概要	Membrane domains play critical roles in the cellular signal transduction. Recent studies on receptor oligomerization and lipid rafts have suggested that dynamic aggregation of molecules in nano- and mesoscopic domains are regulating the signal transduction cascade. However, the regulation mechanisms remain elusive. The present symposium intends to give an overview of the current understanding by providing the most up-to-date views from recent studies using cellular membranes and model systems to gain insight for the future directions.
演者	Jacob Piehler(University of Osnabruck)、貝塚 芳久(物質・材料研究機構)、笠井 倫志(京都大学)、末次 志郎(奈良先端科学技術大学院大学)、林 文夫(神戸大学)、横須賀 忠(東京医科大学)

1SGP

テーマ名	可塑性とロバストネスの動的状態論
	Dynamic state theory for plasticity and robustness of biological systems
オーガナイザー	金子 邦彦(東京大学)、古澤 力(理化学研究所)
概要	Biological systems exhibit robustness to various perturbations, including expression noise and environmental/genetic changes, while they are plastic to the surrounding environment, changing their state through processes like adaptation, evolution, and cell differentiation. Although the coexistence of robustness and plasticity can be understood as a dynamic property of biological systems, the mechanisms responsible for it are largely unknown. In this symposium, we will discuss how we can understand robustness and plasticity of biological systems based on both experimental and theoretical analysis.
演者	田端 和仁(東京大学)、若本 祐一(東京大学)、北沢 美帆(大阪大学)、古澤 力(理化学研究所)、金子 邦彦(東京大学)

●年会2日目(11月26日(土)9:00-11:30, 16:15-18:45(一部延長予定))

2SAA

テーマ名	光遺伝学で活躍するタンパク質分子の生物物理学研究の展望
	Perspective in biophysical studies on protein molecules applicable for optogenetics
オーガナイザー	古谷 祐詞(自然科学研究機構)、須藤 雄気(岡山大学)
概要	Optogenetics, a technology for controlling cellular activity by light, has rapidly expanded over the past decade, paving the way for experiments that would have once seemed impossible. Prior to this new trend, light-receptive proteins utilized for optogenetics have been extensively investigated in a variety of research fields, leading to the elucidation of the molecular mechanisms of them, which enabled us rational designs of optogenetics tools. This symposium focuses on recent advances of light-receptive proteins and their applications for optogenetics. New directions of the optogenetics in biophysics will be discussed.
演者	古谷 祐詞(自然科学研究機構)、八尾 寛(東北大学)、井上 圭一(名古屋工業大学)、須藤 雄気(岡山大学)、増田 真二(東京工業大学)、小柳 光正(大阪市立大学)、七田 芳則(京都大学)

2SBA

テーマ名	構成的生物学の手法による生体分子、分子複合体、分子ネットワークの理解
	Synthetic biology approaches to understand biological molecules, complexes, and networks
オーガナイザー	古田 健也(情報通信研究機構)、多田隈 尚史(京都大学)
概要	Synthetic biology approach has opened the new era of biology and biophysics. In this symposium, to unveil the secret of life phenomena, we focus on the de novo design of artificial molecules, complexes and networks: from redesign of enzymes to reconstitution of intracellular transport systems.
演者	小杉 貴洋(分子科学研究所)、古田 健也(情報通信研究機構)、Alexander I. Taylor(Concordia University)、多田隈 尚史(京都大学)、宮崎 牧人(早稲田大学)、Stefan Diez(Technische Universität Dresden)

2SCA

テーマ名	1分子生物物理学の最前線 ~韓国-日本共催シンポジウム~
	Frontiers of single molecule biophysics ~Korea-Japan joint symposium~
オーガナイザー	尹兌榮(延世大学)、榎 佐和子(東京大学)
概要	Single molecule imaging and manipulation techniques are powerful tools to explore many biological phenomena. They are used to reveal the biological function, mechanics, intermolecular interactions, and dynamics of proteins and nucleic acids at single molecule level. Recently, the field of single molecule biophysics has heralded spectacular technical breakthroughs such as improvement of both spatial and temporal resolution, and development of optics for investigating complicated biological processes in living cells. This symposium provides a forum for world leading Korean and Japanese scientists to share recent advances in field of single molecule biophysics, and discuss future applications in both academic and medical settings.
演者	岡田 康志(理化学研究所/東京大学)、Sungchul Hohng(Seoul National University)、上村 想太郎(東京大学)、Jong Bong Lee(Pohang University of Science and Technology)、榎 佐和子(東京大学)、Nam Ki Lee(Pohang University of Science and Technology)

2SDA

テーマ名	温度生物学の挑戦
	The Developing Field of Thermal Biology
オーガナイザー	岡部 弘基(東京大学)、原田 慶恵(京都大学)
概要	Temperature, a key regulator of biochemical reactions, influences important physiological functions. Recently intracellular thermometry has revealed that there are significant temperature changes at the single cell level related directly to cellular events, which encouraged a novel field of biology focused solely on temperature, thermal biology, to emerge. This symposium will provide an overview of the latest developments in the field of thermal biology, revealing the relationship between temperature and life activities, and will explore how this fundamental physical parameter contributes to all molecular-based biologies.
演者	小野 崇人(東北大学)、鈴木 団(早稲田大学)、中野 雅裕(大阪大学)、井藤 彰(九州大学)、内田 邦敏(福岡歯科大学)、野村 真(京都府立医科大学)

2SEA

テーマ名	生命現象の理解を目指した立体構造インフォマティクスデータの活用
	Applications of protein structure data for understanding biological phenomenon.
オーガナイザー	内古閑 伸之(中央大学)、根本 航(東京電機大学)
概要	Recently, huge amounts of various biological data are generated by various new technologies and available to biological researches for obtaining new biophysical views. For more understanding biology with increasing biological data, it is necessary to develop bioinformatic methods. In this symposium, we introduce biological and bioinformatic studies mainly with protein structures, which can be some clue for deep understanding of biology.
演者	内古閑 伸之(中央大学)、根本 航(東京電機大学)、高雄 啓三(富山大学)、富井 健太郎(産業技術総合研究所)、松崎 由理(東京大学)

2SFA

テーマ名	免疫学と生物物理の接点
	Physical Immunology
オーガナイザー	小林 徹也(東京大学)、秋山 泰身(東京大学)
概要	Adaptive immunity is a highly evolved adaptive system in which fundamental biophysical processes such as molecular recognitions, chemotaxis, and collective responses play the crucial roles. Immunological system is, therefore, a good target to address the question how a complex adaptive system emerges out of the combinations of basic biophysical processes. In this symposium, we clarify the physical aspects of immunology, and discuss the potential contributions of biophysics and quantitative biology to the problems in immunology. TBA
演者	齊藤 隆(理化学研究所)、岡田 峰陽(理化学研究所)、寺口 俊介(大阪大学)、中島 昭彦(東京大学)、小林 徹也(東京大学)、秋山 泰身(東京大学)

2SGA

テーマ名	電子顕微鏡が捉える生物アーキテクチャの解明—高分解能化と多様な情報の融合—
	Biological architecture elucidated by electron microscopy - Integration of highly-resolved structure and other various information -
オーガナイザー	安永 卓生(安永 卓生)、岩崎 憲治(大阪大学)
概要	Recent progress of electron microscopy (EM) provides us a new era when we observe protein structure at a near atomic resolution and protein architecture in situ, such as in lipid bilayers, cellular organelles, cells, tissues and so on. Also, other imaging techniques as light microscopy and atomic force microscopy can be integrated with EM to elucidate organic architecture under physiological conditions. Here we introduce cutting-edge observations and discuss further potentials of EM.
演者	重松 秀樹(理化学研究所)、石原 あゆみ(ライカマイクロシステムズ株)、島袋 勝弥(宇部工業高等専門学校)、阿部 一啓(名古屋大学)、小田 賢幸(山梨大学)、宮崎 直幸(大阪大学)

2SAP

テーマ名	生体分子—電磁波間の共鳴を活用する最先端バイオイメージング
	Advanced bioimaging utilizing resonance between electromagnetic waves and molecules for life
オーガナイザー	根本 知己(北海道大学)、宮脇 敦史(理化学研究所)
概要	For the elucidation of biological emergent functions, multidimensional information is required to be investigated at each level of molecule, cell or organ by using optical imaging or optical manipulations. Recently, several epoch-making methodologies for such visualizations and manipulations have been proposed based on advanced light and laser technologies. Here, we serve an opportunity for “resonant” interactions among researchers controlling electromagnetic waves and ones controlling molecules, hoping that it will produce dramatic breakthroughs and broad-ranging discussions on their potentials for life sciences.
演者	宮脇 敦史(理化学研究所)、曾我 公平(東京理科大学)、加納 英明(筑波大学)、野中 茂紀(基礎生物学研究所)、佐藤 俊一(東北大学)、横山 弘之(東北大学)

2SBP

テーマ名	ラマン散乱で探るbio. phys. chem. 三重点
	Bio-Raman research seeking bio. phys. chem. about the triple point
オーガナイザー	盛田 伸一(東北大学)、星野 由美(広島大学)
概要	Raman microscope studies on live cells have attracted many researchers these past several years, providing cutting-edge applications, for instance, marking small molecules using alkyne based tags, estimating internal states of single cells, and observing tissues and small animals in a direct manner. Here, in this symposium, synthetic chemists and bio-physicists meet and discuss to find upcoming directions of bio-Raman research. The symposium therefore targets researchers who are interested in bio-Raman research not only the experts.
演者	岡 浩太郎(慶應義塾大学)、盛田 伸一(東北大学)、坂内 博子(理化学研究所)、佐藤 雄介(東北大学)、神谷 真子(東京大学)、星野 由美(広島大学)

2SCP

テーマ名	日本-オーストラリア生物物理学会 交流シンポジウム
	BSJ-ASB joint symposium on live cell imaging
オーガナイザー	林 久美子(東北大学)、高橋 聡(東北大学)
概要	We have this symposium on live cell imaging for the purpose of exchanges between Australian Society for Biophysics (ASB) and Biophysical Society of Japan (BSJ). Cutting-edge researches on fluorescence correlation spectroscopy and fluorescence probes to measure biochemical quantities in cells such as pH, ATP concentration and temperature are introduced. Structure analysis of cells using XFEL (X-ray Free Electron Laser) is also included as a new topic on live cell imaging.
演者	Pierre Moens(University of New England)、Elizabeth Hinde(Australian Centre for NanoMedicine)、Chan-Gi Paek(University of Ulsan College of Medicine)、森本 雄祐(理化学研究所)、城地 保昌(高輝度光科学研究センター)、新井 敏(早稲田バイオサイエンスシンガポール研究所)、木村 暁(国立遺伝学研究所)

2SDP

テーマ名	蛋白質の秩序化-脱秩序化研究の最前線
	Frontiers in protein organization and disorganization
オーガナイザー	伊野部 智由(富山大学)、浜田 大三(神戸大学)
概要	“Why and how the proteins can fold into well-ordered structures?” have been one of the most important questions in biology. Recent analysis has clarified that this complex process is also coupled with a variety of biological phenomena including protein translation, amyloid formation and degradation as well as protein-protein interactions. In this symposium, we recategorised these into “Protein Organization / Disorganization Problems” and will discuss future perspectives.
演者	小井川 浩之(東北大学)、茶谷 悠平(東京工業大学)、渡辺 洋平(甲南大学)、河合 秀信(東京大学)、森本 大智(京都大学)、伊野部 智由(富山大学)

2SEP

テーマ名	新しい視点を創る光学顕微鏡技術
	Taking a new look through the optical microscopy
オーガナイザー	加藤 薫(産業技術総合研究所)、西山 雅祥(京都大学)
概要	Optical microscopy is an important tool for imaging and measurement in life sciences. This session focus on technical topics that can be seeds of future key technologies. Detail of each technology should be explained and biophysical application will be shown in the presentation. This session will show possibilities of future life sciences from a standing point of imaging technologies.
演者	西山 雅祥(京都大学)、大瀧 達朗(楨ニコン)、山本 条太郎(北海道大学)、藤芳 暁(東京工業大学)、谷 知己(Marine Biological Laboratory)、白井 智宏(産業技術総合研究所)

2SFP

テーマ名	データ駆動科学(スパースモデリング)による計測の進展
	Advances in experimental measurements by data-driven science based on sparse modeling
オーガナイザー	木川 隆則(理化学研究所)、池谷 鉄兵(首都大学東京)
概要	Sparse modeling (SpM), which is a key technology in data-driven science, enables efficient extraction of the maximum amount of information from experimental measurements by exploiting the inherent sparseness that is common to all high-dimensional data. In this symposium, researchers who are achieving remarkable results by SpM will be presented in different research fields, information science, statistical mechanics, astronomy and structure biology. Clarifying the common principles that apply in the background of each case, the future perspectives of biomolecule measurements will be discussed.
演者	岡田 真人(東京大学)、福島 孝治(東京大学)、本間 希樹(国立天文台 水沢VLBI観測所)、池谷 鉄兵(首都大学東京)、佐々木 裕次(東京大学)

2SGP

テーマ名	リン酸化ダイナミクスが支える生命情報処理機構
	Information processing governed by dynamic protein phosphorylation
オーガナイザー	大出 晃士(東京大学)、小川 寛之(東京大学)
概要	This symposium aims to foster a deeper understanding of the significance of reversible protein phosphorylation driven by kinases and phosphatases in the regulation of dynamic information processing in cells, including frequency control in central nerve systems, spatiotemporal regulation of cell structure, rhythmic response driven by molecular oscillator, and signal processing through kinase cascade. From a cross-cutting perspective, a unified property of reversible phosphorylation that governs nonlinear and complex cellular dynamics will be discussed.
演者	大出 晃士(東京大学)、小川 寛之(東京大学)、細川 智永(理化学研究所)、畠山 哲央(東京大学)、日比野 佳代(国立遺伝学研究所)、藤井 哉(東京大学)

●年会3日目 (11月27日(日)9:45~12:15(一部延長予定))

3SAA

テーマ名	蛍光・発光計測技術が拓く細胞生物学の新地平
	New fields of cell biology explored with fluorescence and bioluminescence techniques
オーガナイザー	今村 博臣(京都大学)、小柴 琢己(九州大学)
概要	Fluorescence techniques have played great roles in biological research. Especially, fluorescence imaging techniques have propelled cell biology research, and are still under rapid development. Recently, bioluminescence techniques also become important for cell biology. In this symposium, we will invite relatively young investigators who explore new fields of cell biology with fluorescence and bioluminescence techniques.
演者	小柴 琢己(九州大学)、Jang MoonSun(東京大学)、大場 雄介(北海道大学)、白崎 善隆(東京大学)、王 丹(京都大学)、今村 博臣(京都大学)

3SBA

テーマ名	新学術領域研究「理論と実験の協奏による柔らかな分子系の機能の科学」共催 生体分子の柔らかさと機能をつなぐもの
	What connects the softness of biomolecules to their functions?
オーガナイザー	石井 邦彦(理化学研究所)、井上 圭一(名古屋工業大学)
概要	Many biomolecules achieve their functions through dynamically changing their conformations. Behind such dynamics-function couplings, there exist exquisite mechanisms which utilize the softness of the molecules, and each of them is accompanied with a characteristic controlling factor. In this symposium, presentations will be given by young researchers from theory and experiment focusing on various factors connecting molecular softness with biological functions. Through the discussion over a breadth of examples, we pursue a universal concept underlying the role of softness in biological systems.
演者	石井 邦彦(理化学研究所)、石川 春人(大阪大学)、岩田 達也(名古屋工業大学)、鎌形 清人(東北大学)、竹村 和浩(東京大学)、長谷川 太祐(京都大学)

3SCA

テーマ名	次世代研究者による動的構造生命
	Dynamic structural biology by next-generation researchers
オーガナイザー	塚崎 智也(奈良先端科学技術大学院大学)、西田 紀貴(東京大学)
概要	The recent developments of innovative technologies in the fields of X-ray crystallography, NMR, cryo-EM, high-speed AFM, and MD simulations, provided the dynamic structural information that greatly contributed to the elucidation of protein functions. In this symposium, 8 prominent young investigators, who are expected to lead the next generation of structural life sciences, will present the latest achievements in their research.
演者	川崎 由貴(九州大学)、有吉 真理子(京都大学)、外山 侑樹(東京大学)、菅 倫寛(岡山大学)、柴田 幹大(金沢大学)、古川 新(奈良先端科学技術大学院大学)、森 貴治(理化学研究所)、宮下 治(理化学研究所)

3SDA

テーマ名	運動超分子マシナリーが織りなす調和と多様性
	Harmonized supramolecular motility machinery and its diversity
オーガナイザー	宮田 真人(大阪市立大学)、上田 太郎(早稲田大学)
概要	The molecular mechanism of force generation by "conventional" motor proteins, e.g. myosin, kinesin, and dynein, is now fairly well understood after decades of research. However, many mechanisms of motility cannot be explained using only conventional motor proteins. Such motilities are driven by highly organized structures, which we call "supramolecular motility machinery", and their diversity records the evolutionary history of life on earth. In this symposium, we will discuss about the principle and the origin of motility, based on new knowledge about poorly characterized motility mechanisms.
演者	小嶋 誠司(名古屋大学)、高橋 優嘉(東洋大学)、南野 徹(大阪大学)、田岡 東(金沢大学)、宮田 真人(大阪市立大学)、柴田 敏史(長崎大学)、上田 太郎(早稲田大学)

3SEA

テーマ名	多細胞合成生物学
	Synthetic biology for multicellular system
オーガナイザー	木賀 大介(早稲田大学)、戎家 美紀(理化学研究所)
概要	Synthetic/reconstruction approach for reaction network in cells enables us to understand the network from systems science points of view. On top of construction of such network in a cell, a system with multi cell species each of which accommodates synthetic network has also been constructed in this manner. Developments in cell manipulation techniques in microfluidics or artificial organ with ES/iPS cells can be combined with the synthetic approach. In this symposium, we will introduce frontline of the approach and discuss future innovation from this field.
演者	鮎川 翔太郎(東京工業大学)、戎家 美紀(理化学研究所)、瀧ノ上正浩(東京工業大学)、田川 陽一(東京工業大学)、高里 実(理化学研究所)

3SFA

テーマ名	ミトコンドリアの分子マシナリーと機能管理: 合成、構造、機能、適応、そして淘汰
	Management of mitochondrial functions by molecular machineries: biogenesis, structure, function, adaptation, and elimination.
オーガナイザー	遠藤 斗志也(京都産業大学)、鈴木 俊治(東京大学)
概要	In this symposium, we will discuss recent progress in the studies on mitochondrial protein machineries. Machineries for the transport of proteins and lipid (Endo) and for the cristae-formation (Oka) will be introduced, showing how the complicated mitochondrial architecture is generated. Structures and functions of the respiratory chain (Tsukihara and Kita) and FoF1-ATP synthase (Suzuki) will be discussed, emphasizing the power of X-ray analyses. The novel quality control mechanism for eliminating dysfunctional mitochondria will be shown, referring to the Parkinson-disease (Matsuda).
演者	遠藤 斗志也(京都産業大学)、鈴木 俊治(東京大学)、北 潔(長崎大学)、月原 富武(兵庫県立大学)、松田 憲之(東京都医学総合研究所)、岡 敏彦(立教大学)

3SGA

テーマ名	人工生体プログラマブルシステム ~精密構造設計から分子ロボティクスへ~
	Programmable bioinspired systems: Integration of precisely designed architectures towards molecular robots
オーガナイザー	石川 大輔(東京工業大学)、鈴木 勇輝(京都大学)
概要	It is one of the goal in biophysics to create artificially the dynamic structure or systems which lead the most suitable solution depending its environment and diverse functions like a cell. In recent years, there has been much efforts to construct molecular robots with sensing, computation and actuation by hybrid systems built on mechanical engineering and biology. In this symposium, we will discuss the approaches microscopically and macroscopically to integrate the dynamic systems based on a cell into a consistent system.
演者	遠藤 政幸(京都大学)、青野 真士(東京工業大学)、武仲 能子(産業技術総合研究所)、与那嶺 雄介(九州大学)、石川 大輔(東京工業大学)、鈴木 勇輝(東北大学)