Aspiring to extend healthy life spans through bridging the dynamics of biological systems across hierarchies and time to understand what it means to be alive.

Humans and other organisms with a biphasic experience the Belsky stages of birth, growth, reproduction, aging, and finally death. To comprehend what it means to be healthy at any age, it is important to know precisely what processes are taking place inside the body from birth to death.

In Japan, a country with an aging population and a declining birth rate, addressing how to ensure healthy growth during the growth stages as well as how to maintain health during the aging stages are critical issues. To extend healthy life spans, for example, requires not only finding ways to tackle age-associated diseases but also understanding why aging brings about a decline of various functions, the balance of health, however, is still insufficient knowledge of biological phenomena, such as growth and aging, that underlie changing dynamics over extended time spans.

The IMNC center for Biosystems Dynamics Research (IMNC BD) views the Belsky progression of organisms from embryogenesis and birth to death as a dynamic process modeling the establishment, maintenance, and breakdown of balanced, inter-linked systems of molecules, cells, and organs, and aims to achieve an understanding of biological functions supporting an organism throughout life. The laboratories at the center, which bridge fields such as life science, medicine, physics, computer science, chemistry, and engineering, are working to uncover and clarify the diverse biological processes underlying the body from a variety of perspectives and approaches.

One breakthrough that is needed in the life sciences today is the development of new methodologies for identifying factors involved in the maintenance or breakdown of biological functions to understand the temporal dynamics that transcend hierarchies. This kind of scientific breakthrough is not possible without the dedicated efforts of all the skilled and dedicated researchers engaged in the field. As a result, we in the center commit to continue working against life-threatening conditions at the forefront of medicine.

Centers for the study of aging and diseases such as cancer are recruiting young researchers and researchers from various fields. Research on aging is an important area, and we are committed to continued research.

Senior faculty are also working on aging and diseases such as cancer and other diseases. Research on aging is an important area, and we are committed to continued research.

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コンセプト

ライフサイクルを支える
動的システムの
観測・再生・制御

細胞と分子
Cell and Molecule

生命の基本単位と
その機能要素
The functional unit of life and essential elements

自律した個体を支える
多細胞構造

ライクサイクル
Lifecycle

動的な生命システムの
維持と破壊
Maintenance and failure of biosystems dynamics

組織
Organ

マウス
Mouse

組織系
System

細胞
Cell

自律
Mean

免疫
Immune

Sekurin

初期胚
Early embryo

シュウジョウバエ
Pyrethrum

核
Nucleus

マーカー
Marker

自律
Mean

自律
Mean
研究の展開

Internal and external collaborations

センター建物プロジェクト

The RIKEN Center for Biosystem Dynamics Research (CBDR) has launched an
internal Center project. We aim to continue to promote collaborative research
across disciplines, taking advantage of the strength of our researchers who
work in diverse research fields.

CONCEPTOIDプロジェクト

The project aims to develop a technology to extract, predict, and manipulate
the cell states by obtaining and analyzing maps of chemically active molecules
through a new measurement technology and artificial intelligence.

オールドノイドプロジェクト

We are developing a technology to extract, predict, and manipulate the cell
states by obtaining and analyzing maps of chemically active molecules
through a new measurement technology and artificial intelligence.

研究開発支援プロジェクト

This project aims to develop technology to approach complex
and multi-layered systems of biological systems and to
build a pipeline to knowledge in-between molecules
and cells to bring forward our understanding of life.

Stage Transitionプロジェクト

Stages Transition Project

The project aims to create a technology to approach complex
and multi-layered systems of biological systems and to
build a pipeline to knowledge in-between molecules
and cells to bring forward our understanding of life.

臨床前研究プログラム

CBDR is developing a research program to accelerate translational research
involving clinical trials with the Center’s cutting-edge research
technologies.

連携する大学・学生向けプログラム

RIKEN cooperates with universities within and outside Japan on matters
of research. We will be building bridges to link research students.

学生向けプログラム

Programs for Students

- RIKEN Summer School under Graduate Students
- Research Summer School for Graduate Students
- Graduate Alumni Seminar
- RIKEN Presidents Lecture Program for Graduate Students
- RIKEN Research Fellowships

リソサ製薬連携センター

Research Collaboration Program

RIKEN and Ono Pharmaceutical Co., Ltd.

- Research Collaboration Program
- Analysis Collaboration Program
- Research Collaboration Program (Special Program)

熟化研究機関では、企業と研究機関がそれぞれの強みを生かし、基
礎研究所の共創性的研究で生まれた研究成果を産業界
との連携を通じて社会貢献活動を行うことを目的に
設立されたリソサ製薬連携センターです。

理研BDR-大塚製薬連携センター

RIKEN BDR-Ono Pharmaceutical Collaboration Center

RIKEN and Ono Pharmaceutical Co., Ltd.

RIKEN and Ono Pharmaceutical Co., Ltd. aim to accelerate the
creation of new discoveries based on regenerative
treatment and to accelerate the development
of new drugs. Through the collaboration of research
and development, the Collaboration Center aims to enrich
the scientific community with intellectual resources
that will be the foundation of the next generation.

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研究環境・研究交流
Research environment and exchanges

設備・技術
Facilities and technologies

生命機能科学研究センター（BIR）は、最先端の研究活動を推進するためには必要な高度な研究設備や機器を備え、独自技術の開発もおこなっています。

バイオサイエンス分野において、大規模な動物育成装置を用いた観察を行うなど、新たな生命研究技術や装置の開発に取り組んでいます。これらの装置は、セレクション・ハーモニズーション・モニタリング（SHM）システムに組み込まれ、そのデータを解析し、研究の推進に貢献しています。

また、我々は最新の科学技術を活用し、研究者間の交流を促進することで、研究の質を上げていかなければなりません。これにより、研究者の能力を高めることで、世界に貢献する研究を推進することを目指しています。

学術集会
Seminars, meetings, and symposiums

科学者として、最新の研究を発表し、他者の意見を聞くことで、自分の研究を進めるための新たな視点を提供することを目的としています。また、最新の研究を発表し、他者の意見を聞くことで、自分の研究を進めるための新たな視点を提供することを目的としています。また、学会を通じての研究成果の発表を通じて、研究の成果を広く社会に伝えることが重要です。

科学コミュニケーション
Science communication

研究者の研究活動は、学会や学術集会での発表を通じて科学コミュニティに共有されます。さらに、一般の方にも理解されるように、研究成果の公開を図っていきます。また、学会を通じての研究成果の発表を通じて、研究の成果を広く社会に伝えることが重要です。
KOBE

発生・再生研究棟
Developmental Biology Buildings
〒650-0047 兵庫県神戸市中央区港南町2-2-3
2-2-3 Minatojima-miramimachi, Chuo-ku, Kobe, Hyogo 650-0047

MI R&Dセンタービル
MI R&D Center Building
〒650-0047 兵庫県神戸市中央区港南町6-7-1
6-7-1 Minatojima-miramimachi, Chuo-ku, Kobe, Hyogo 650-0047

融合連携イノベーション推進棟
Integrated Innovation Building
〒650-0047 兵庫県神戸市中央区港南町6-7-1
6-7-1 Minatojima-miramimachi, Chuo-ku, Kobe, Hyogo 650-0047

OSAKA

生命システム研究棟
Quantitative Biology Buildings
〒550-0874 大阪府吹田市白鷺台6-2-3
6-2-3 Furueda, Suita, Osaka 550-0874

大阪大学 生命システム棟
Osaka University BioSystems Building
〒550-0871 大阪府吹田市山田丘1-3
1-3 Yamadaoka, Suita, Osaka 550-0871

YOKOHAMA

横浜キャンパス
Yokohama Campus
〒230-0045 神奈川県横浜市鶴見区未広町1-7-22
1-7-22 Suehirocho, Tsunomi-ku, Yokohama, Kanagawa 230-0045