

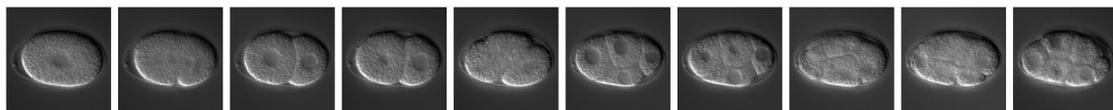
BD-zarr: 生命現象の時空間動態データを記述するための次世代フォーマットの開発

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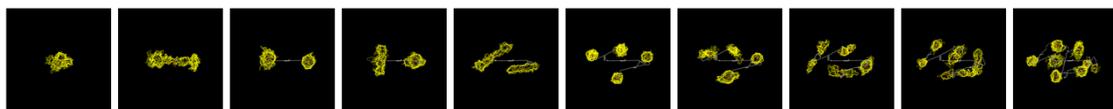
1. 理化学研究所 生命機能科学研究センター、2. フランシス・クリック研究所、3. 理化学研究所 情報統合本部

画像データや画像解析で得られた定量データの共有が進んでいる

生細胞イメージングによる画像データ



画像解析技術による定量データ



(Kyoda et al. *Nucleic Acids Res.*, 2013)

画像・定量データの解析ツールとワークフロー

SSBDデータベース (https://ssbd.riken.jp)



SSBD:database

Organism: ex. C. elegans [Search] [Clear]

Introduction

Systems Science of Biological Dynamics database (SSBD:database) is an added-value database for biological dynamics. It provides a rich set of open resources for analyzing quantitative data and microscopy images of biological objects, such as single-molecule, cell, tissue, individual, etc., and software tools for analysis. Quantitative biological data and microscopy images are collected from a variety of species, sources, and methods. These include data obtained from both experiments and computational simulations.

Find the dataset from the search box above, or see the dataset list on the [Resources](#).

See [Citation Policies \(PDF\)](#) for citation instructions.

SSBD database started operation in 2013, under the life science database integration promotion project of the Japan Science and Technology (JST), National Bioimage Database Center (NBDC). Currently, it is funded by RIKEN, JST, and Grant-in-Aid for Scientific Research from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (MEXT).

For the overview of the SSBD:database/repository, please refer to the paper.
Tohsato, Y., Hi, K. H. L., Kyoda, K., and Onami S. (2016) "SSBD: a dataset of quantitative data of spatiotemporal dynamics of biological phenomena" *Bioinformatics*, 32(12): 3471-3479.
<https://doi.org/10.1093/bioinformatics/btw417>

Japanese / 日本語

Samples

Microscopy Images

- Calcium response and shape changes in oocyte of *C. elegans*
- DIC image of nuclear division dynamics in *C. elegans* embryo
- TEM image of retinal tissue from human embryonic stem cells

Quantitative Data

- Nuclear division dynamics in *D. rerio* wild-type embryo
- Nuclear division dynamics in *C. elegans* wild-type embryo
- Single molecule dynamics in *E. coli* wild-type

Funding

OLSP, CREST, JST, NBDC, RIKEN

Tweets by @ssbd_en

Shuichi Onami @ssbd_en
Onami Lab @BDR_RIKEN is seeking a Scientist who will work for R&D of the SSBD @ssbd_en, an open added-value DB and repository for bioimage and biodynamics data. Those who are interested in data visualization, API, analysis framework are welcome to apply riken.jp/en/careers/res...

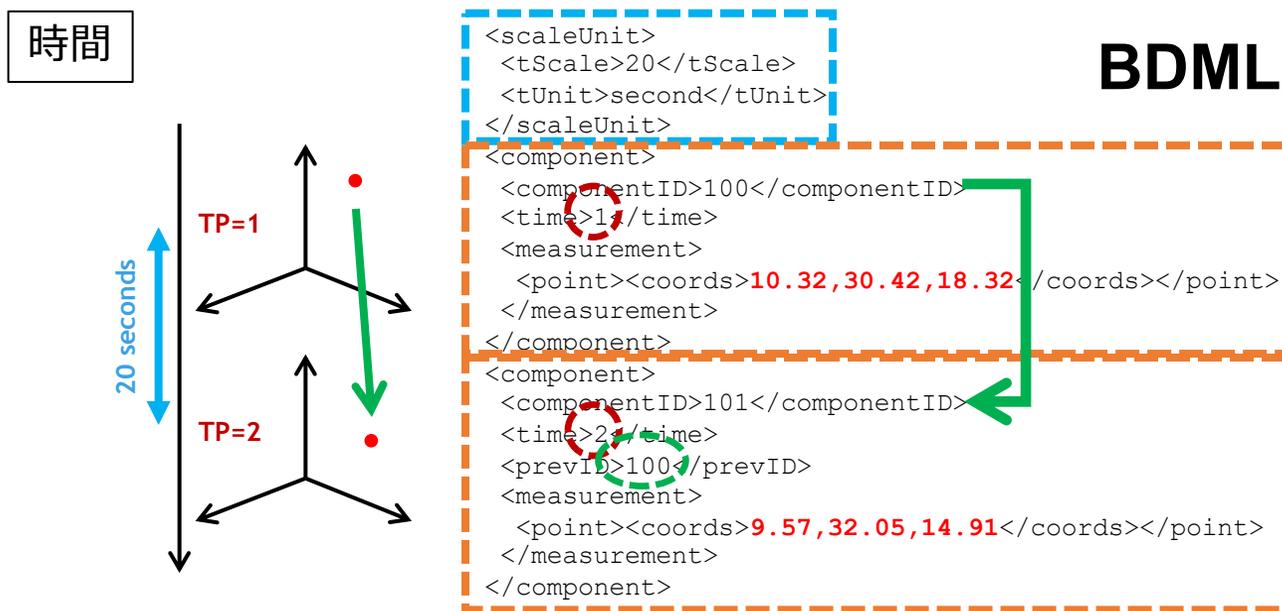
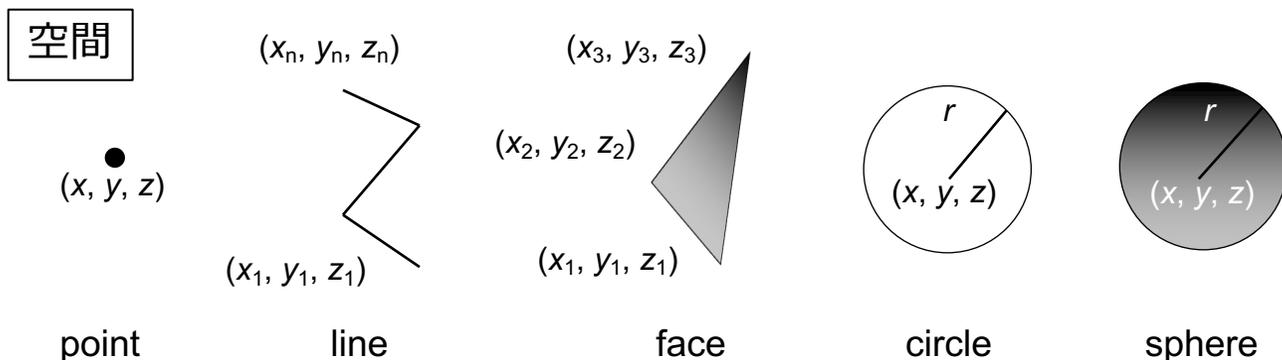
Shuichi Onami @ssbd_en
Introduction movie for NeuroGT is up! NeuroGT is an image database of neurogenic tagging driver mouse lines. Watch how you can explore neurogenic-tagged neurons in the brain for 4 driver lines tagged on each single day during the neurodevelopmental period. ssbd.riken.jp/neurogt/misc/N...

SSBD:database / SSBD:repository
"Redundant roles of EGFR ligands in the ERK activation waves during collective cell migration" doi.org/10.26508/lsa.2... has published on Life Sci Alliance @LSAJournal
Congrats!
SSBD:repository shares the original images of the paper. See doi.org/10.24631/ssbd...

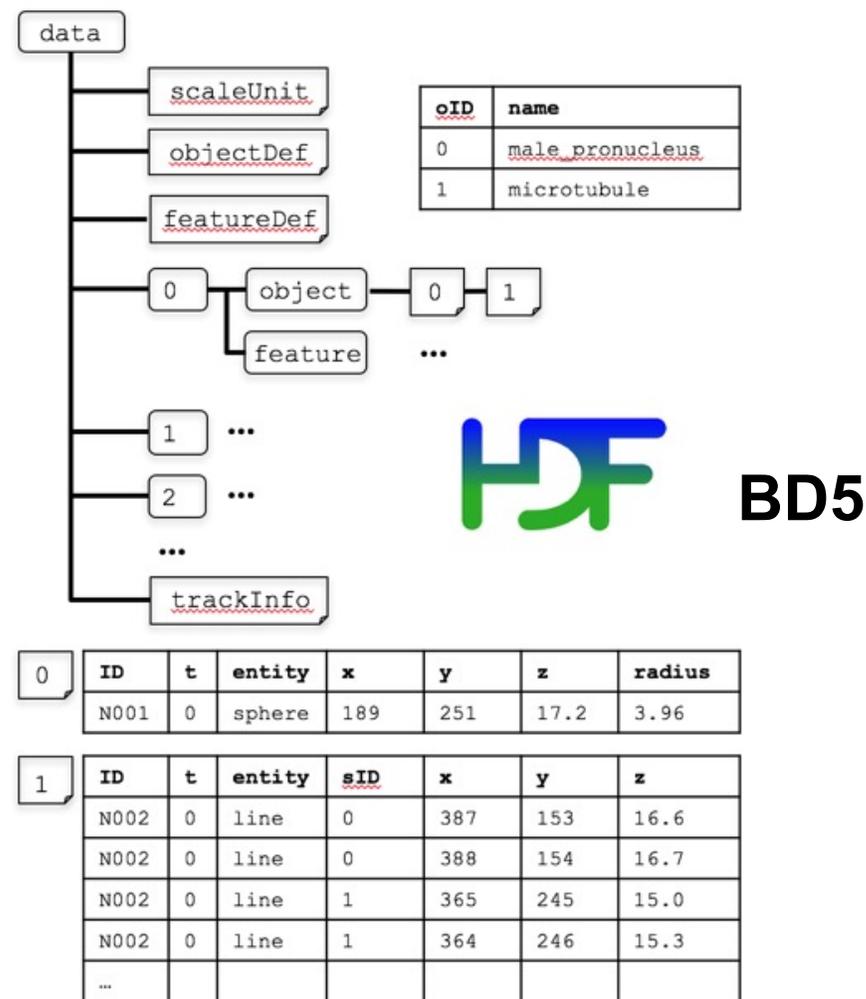


(Tohsato et al. *Bioinformatics*, 2016)

生命現象の時空間動態データを記述するデータ形式の開発



(Kyoda et al. *Bioinformatics*, 2015)



(Kyoda et al. *PLoS ONE*, 2020)

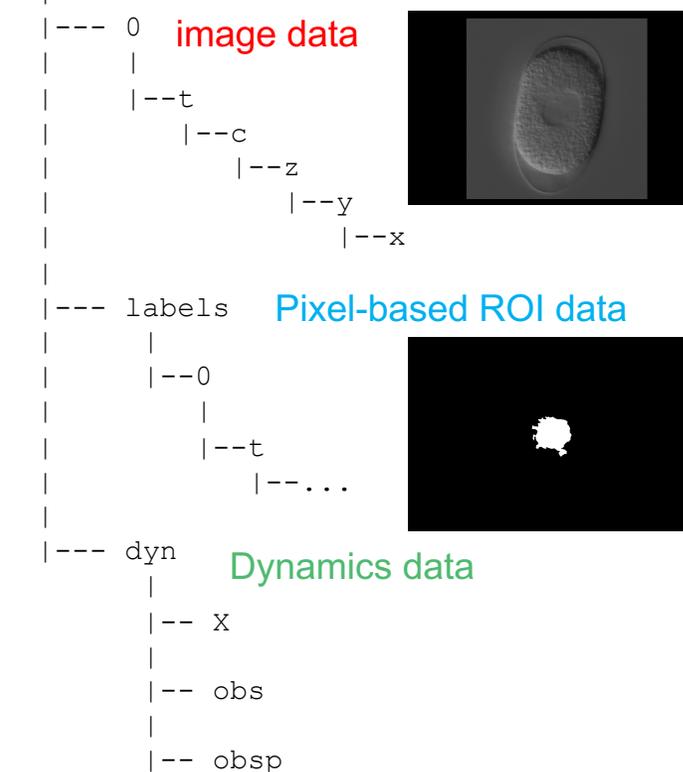
クラウドに適した次世代フォーマットBD-zarrを開発している

例:

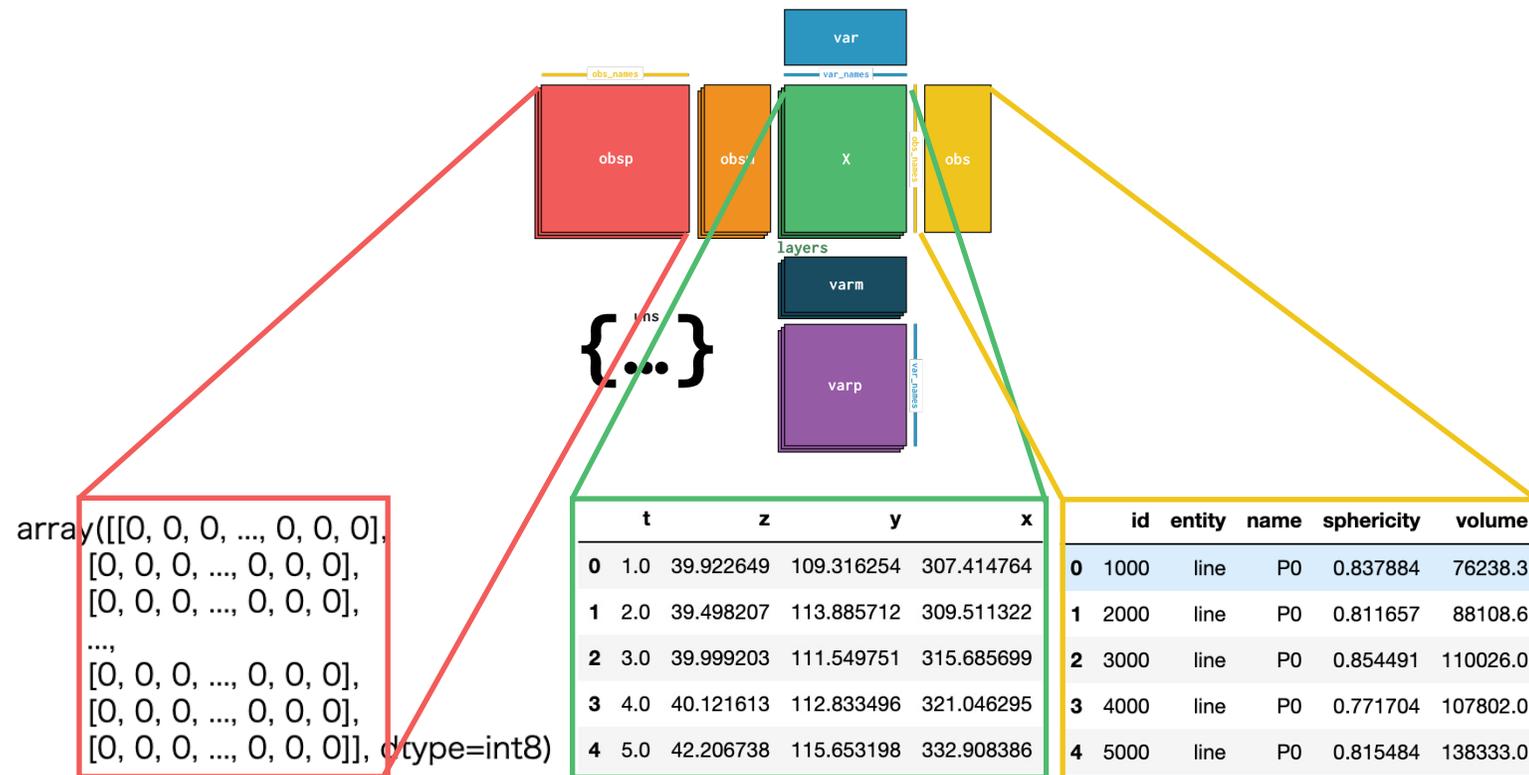
wt-N2-081015-01

ome-zarr

BD-zarr



AnnData (<https://anndata.readthedocs.io/>) を採用

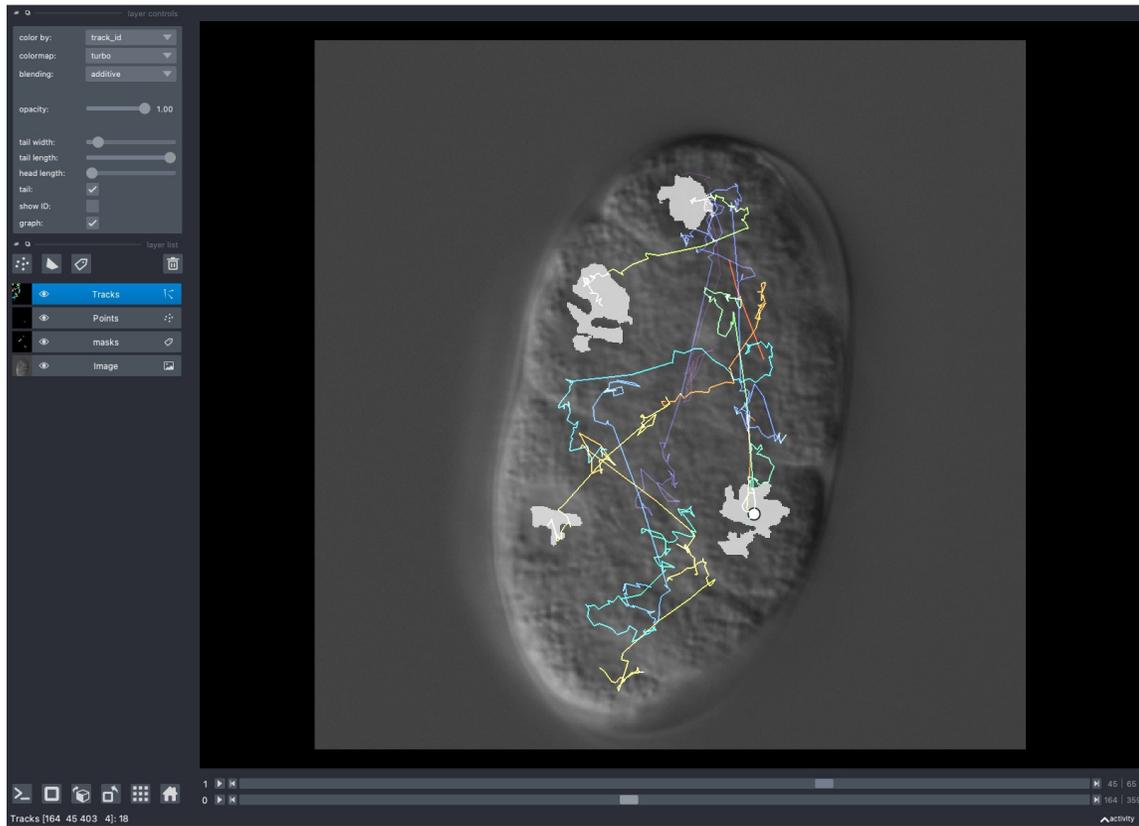


obsp: トラッキング情報を格納

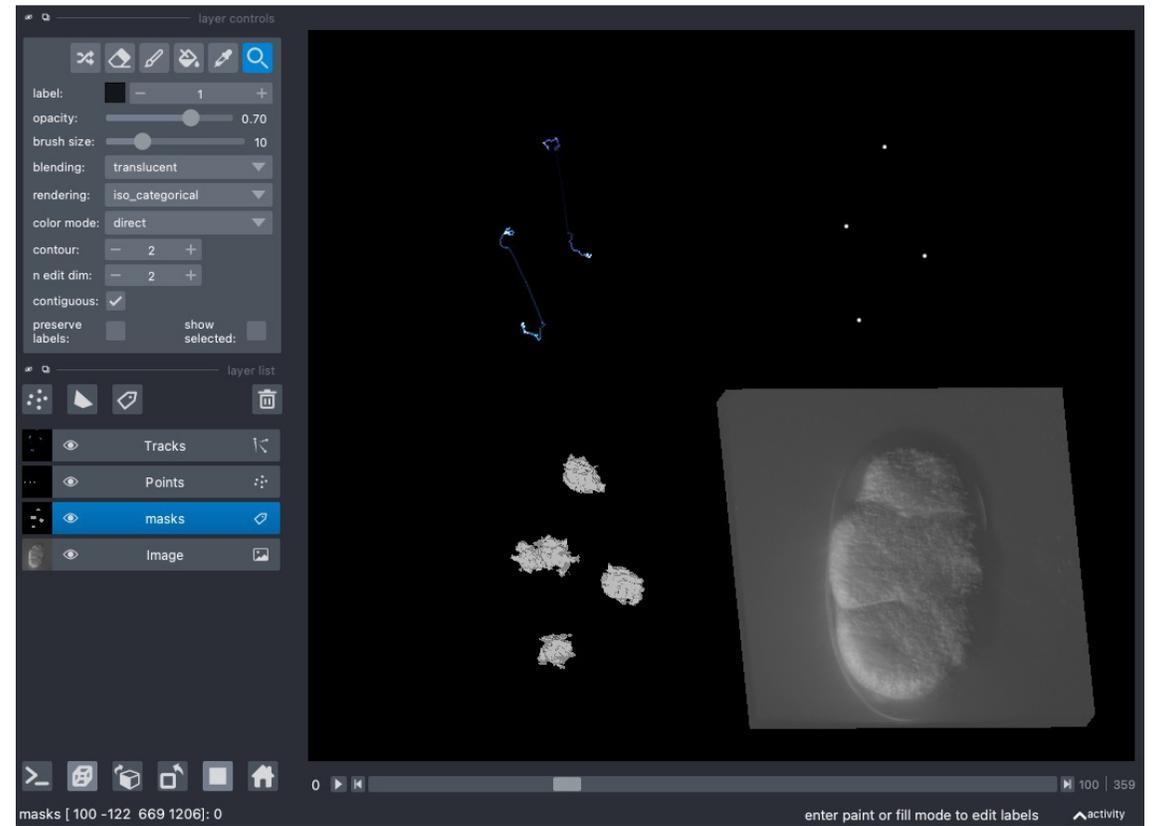
X: 重心座標 (座標) 情報を格納

obs: メタ・特徴量情報を格納

napariイメージビューアーでのデータ可視化



検出領域、重心座標、追跡軌跡を可視化



各情報を別パネルで3次元描画