

# Progress Update of A Web-based Volume Browser

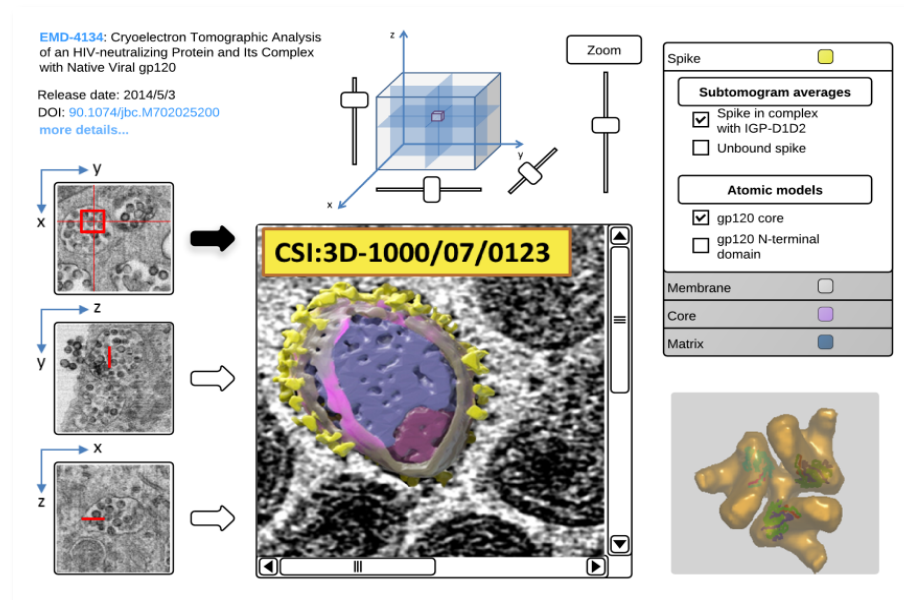
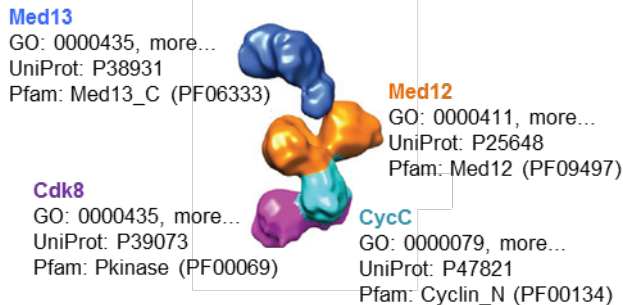
12<sup>th</sup> Annual OME Users' Meeting, Dundee 2017

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# MOL2CELL Project

- Funded by MRC/BBSRC – Oct 2014-Sep 2017
- Two scientific programmers (currently three)
- Goals
  - EMPIAR building
  - Volume-browser tool
  - Segmentation-annotation tool

**CDK8 kinase module (CKM)**  
**Shared identifiers**  
 Organism: *Saccharomyces cerevisiae*  
 GO: 0000122: negative regulation of transcription from RNA polymerase II promoter



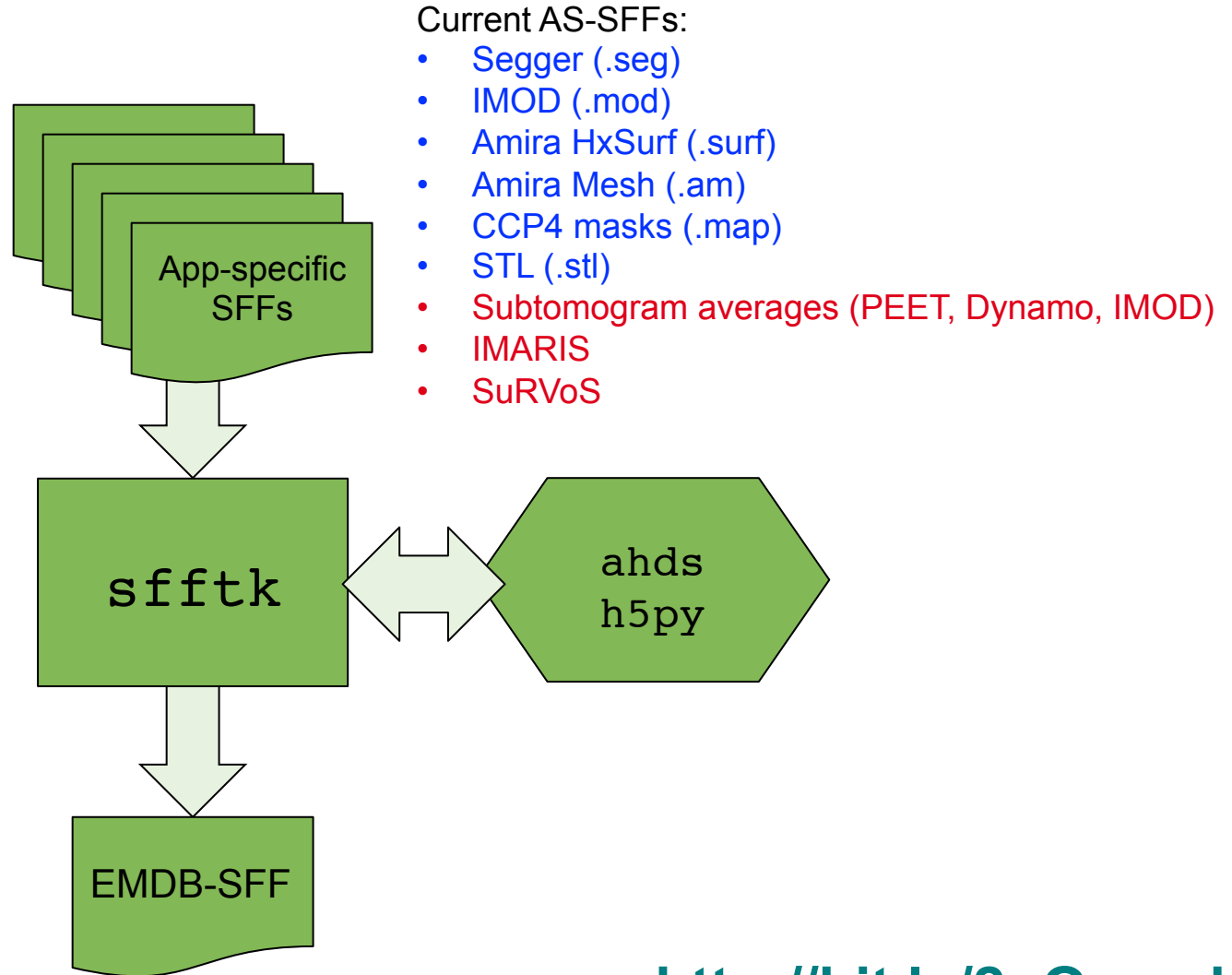
Annotated segmentations enable:

- Integrated 2D/3D browsing
- Future: automated fitting of new structures as PDB and EMDB grow

# The Moving Parts

- **Segmentation File Format: EMDB-SFF**
  - Schema on CCPForge: <http://bit.ly/2oEawxW>
  - Community-driven
  - Formats: XML (.sff), HDF5 (.hff), JSON (.json)
- **Toolkits: (sfftk and sfftk+)**
  - sfftk: conversion to and annotation of EMDB-SFF files
  - sfftk+: conversion to and pushing of ROIs to OMERO
  - sfftk source on CCPForge: <http://bit.ly/2oQnvxd>
- **Segmentation Annotation Tool (SAT)**
  - Web-based annotation of EMDB-SFF files
  - Uses EBI's Ontology Lookup Service (OLS)
  - *In development*

# sfftk

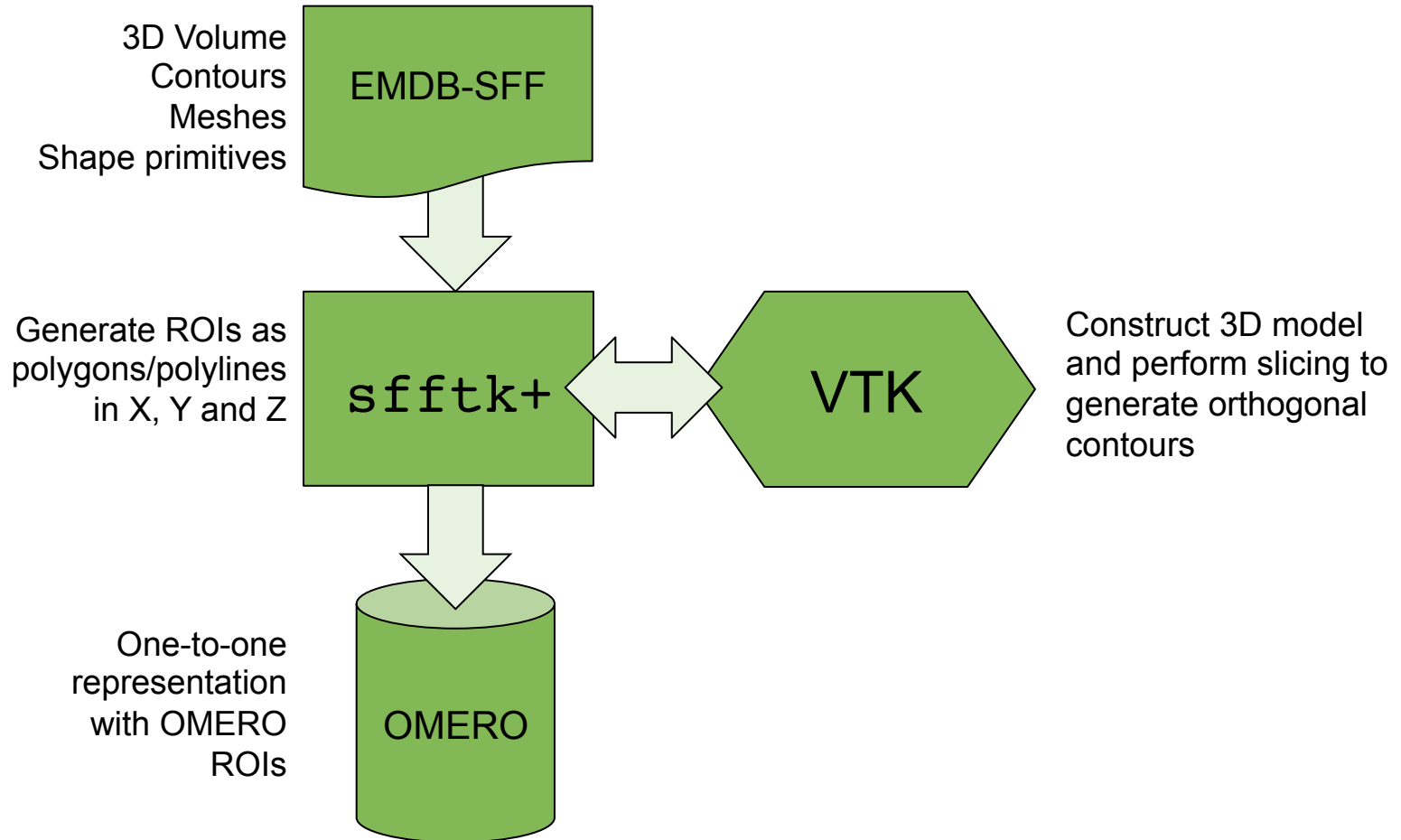


## Current AS-SFFs:

- Segger (.seg)
- IMOD (.mod)
- Amira HxSurf (.surf)
- Amira Mesh (.am)
- CCP4 masks (.map)
- STL (.stl)
- Subtomogram averages (PEET, Dynamo, IMOD)
- IMARIS
- SuRVoS

<http://bit.ly/2oQnvxd>

# sfftk+



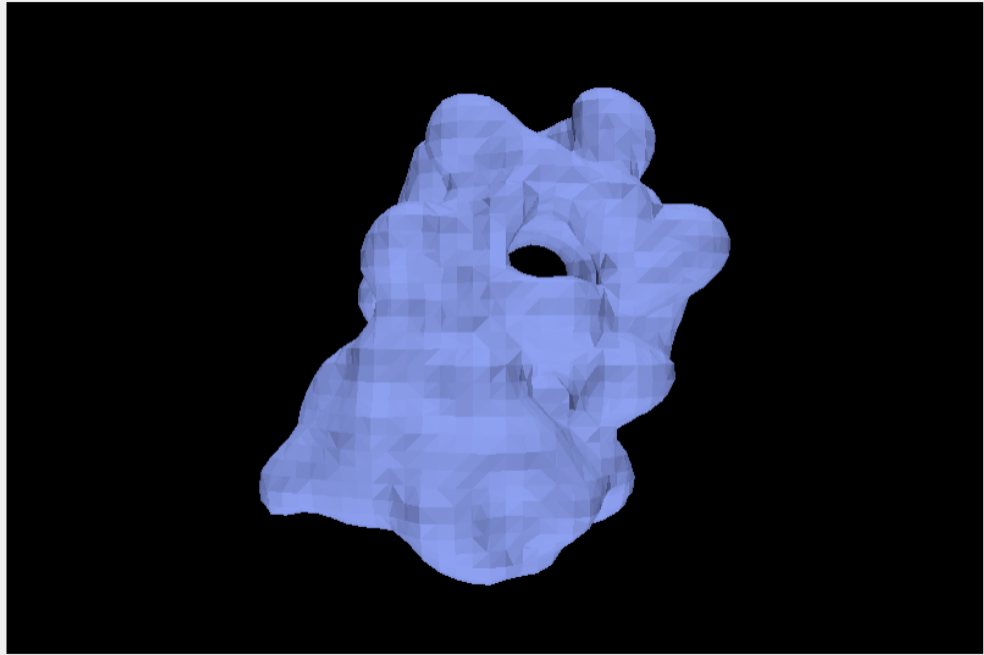
# Volume Browser

EMD-1832 > Volume Browser

**Drosophila melanogaster**  
Complex bound to ADP.BeF3

**Sample name:** Drosophila melanogaster complex bound to ADP.BeF3  
**Method:** Single-particle cryo-EM  
**Resolution:** 28Å (FSC 0.5)

**3D Viewer x**



**Top view**

**Front view**

**Right view**

**Threshold**  
Recommended contour level: 0.42  
Minimum: -0.16  
Maximum: 2.05  
Average: -0.00  
Sigma: 0.15

**Wireframe**  
 Wireframe  
**Opacity Level**  
[Slider]

**Map colour:** [Color Picker] **Background colour:** [Color Picker]

**Clipped view**  
 Clipped view  
**Clipping Front Plane**  
[Slider] 0.5  
**Clipping Back Plane**  
[Slider] -0.5

**Related Segments**

- licensing factor MCM3... (1)
- licensing factor MCM6 (1)
- licensing factor MCM7 (1)
- licensing factor MCM2 (1)
- licensing factor MCM4 (1)
- dc45 (1)

Entries

# Help!

- Challenges
  - Very large files with generated ROIs
  - Hierarchical segmentations (*X contains Y*)
- Workshop session/unconference on ROIs
  - Best practices in writing clients
  - Efficiency pushing large volumes of data
  - Working with ROI Folders (YouTube video not clear)
- Amira ® header and data streams package
  - `pip install ahds`

# Acknowledgements

- Gerard Kleywegt
- EM group
  - Ardan Patwardhan (TL)
  - Sanja Abbott
  - Andrii Iudin
  - Arun Prasad Pandurangan
  - Sriram Somasungharam
  - *Alumni: E Sanz Garcia, C Lugo, J Salavert Torres (UPV), I Lagerstedt (Lilly)*
  - *Project students: M Holmdahl, V Lysenkov, I Solanes Valero*
- Birkbeck
  - Maya Topf
  - Helen Saibil
- Baylor – Wah Chiu
- RCSB – Cathy Lawson
- Francis Crick
  - Lucy Collinson
- Raffa Carzaniga
- Peter Rosenthal
- STFC
  - Martyn Winn
- Dundee
  - Jason Swedlow
  - OME Team & Glencoe Software Inc.
- CNB Madrid
  - Jose Maria Carazo
- Chinese Academy of Sciences
  - Fei Sun
- EBI
  - Helen Parkinson
  - Alvis Brazma
  - Ugis Sarkans
- And many more!

