

JCB

THE JOURNAL OF CELL BIOLOGY

JCB Data
Viewer

A New Dimension for Publishing and Sharing Image Data

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Executive Editor, *The Journal of Cell
Biology*

The Rockefeller University Press

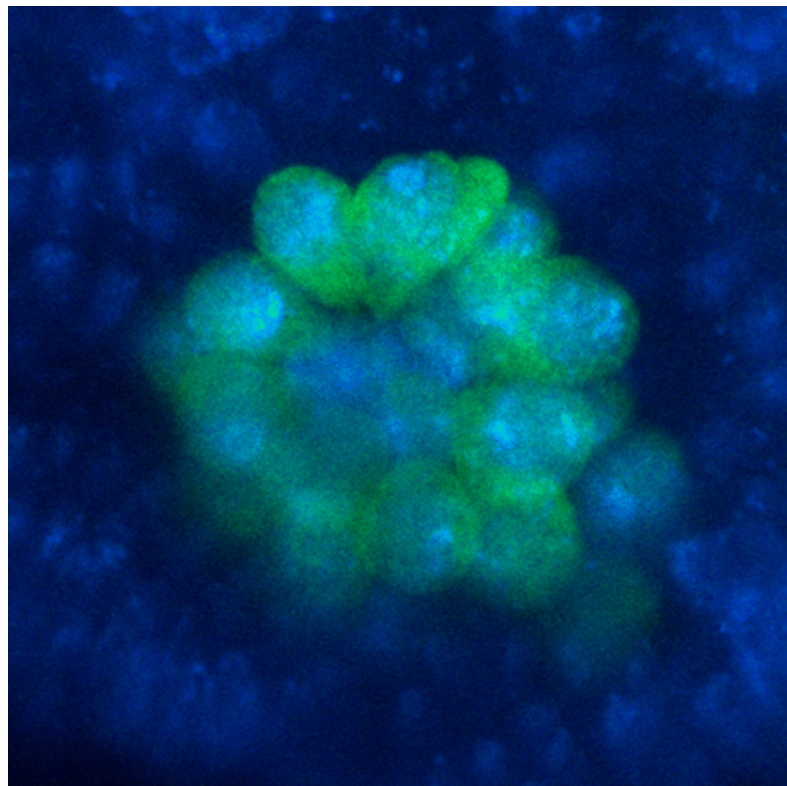
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PRESS

QUALITY AND INTEGRITY

What does JCB have to do with OME?



The Journal of Cell Biology

- Launched in 1955
- Publish a LOT of microscopy images & movies
- Results derived from multi-dimensional microscopy data
- Request minimum information about data acquisition
- Focus on data integrity

<http://jcb-dataviewer.rupress.org>



JCBDataViewer - Home Page - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://jcb-dataviewer.rupress.org/

JCB Data Viewer

GLENCOE SOFTWARE THE ROCKEFELLER UNIVERSITY PRESS QUALITY AND INTEGRITY

log in

DATAVIEWER HOME ARCHIVE SUPPORTED FILE TYPES INSTRUCTIONS FOR USE CONTACT ABOUT

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Current Issue

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[See the Editorial for more details on the JCB DataViewer.](#)

Welcome to the JCB DataViewer!

The JCB DataViewer is a browser-based application for viewing original image files - from various types of microscopes and gel-documentation systems - associated with JCB articles. It is the first browser-based system for viewing multi-dimensional light microscope image data.

Please note: Data for all articles submitted to the JCB after December 1, 2008 will be peer reviewed. All data for articles submitted before this date were uploaded retrospectively and were not peer reviewed.

Featured Images

LOCUS-SPECIFIC AND ACTIVITY INDEPENDENT GENE REPOSITIONING DURING EARLY TUMORIGENESIS
K.J. Meaburn, T. Misteli
J Cell Biol. 2008. 180:39-50 DOI: 10.1083/jcb.200708204.
(in Figure 2:)



FISH ON CONTROL 3D CULTURES
PTEN gene loci (red) and VEGF loci (green; the color of VEGF was changed to red in the main manuscript) were detected in paraformaldehyde fixed MCF10A.B2 cells grown for 20 days under 3D growth conditions. A representative acinus structure is shown. Whole acini were not imaged to reduce bleaching and to increase the number of acini analyzed. Instead the optical sections imaged totaled approximately 15-20µm in thickness.

[FULL VIEWER ARTICLE FIGURE]

HETEROCROMATIN IS REFRACTORY TO GAMMA-H2AX MODIFICATION IN YEAST AND MAMMALS
J.-A. Kim, M. Kruhlak, F. Dotiwala, A. Nussenzweig, J.E. Haber
J Cell Biol. 2007. 178:209-218 DOI: 10.1083/jcb.200612031.
(in Figure 6:)



DISTRIBUTION OF PHOSPHORYLATED H2AX IN TSA AND NCS TREATED CELLS
Wildtype mouse embryo fibroblasts were treated with the histone deacetylase inhibitor trichostatinA 8 hours before being incubated with the radiomimetic drug neocarzinostatin (NCS) for 1hour prior to being fixed and immunolabeled against the phosphorylated form of histone H2AX (red, Alexa 546 conjugated secondary antibody) and co-stained with DAPI (blue). A stack of confocal optical slices was captured through the depth of the nucleus (Z-axis) using a 63x Plan-Apochromat (N.A. 1.4) objective lens, an optical slice thickness of 800nm, a Z-step size of 200nm, and X-Y pixel size of 70nm.

[FULL VIEWER ARTICLE FIGURE]

Done

A browser-based application for viewing original image files associated with JCB articles.

Various light microscopes and gel-documentation systems supported.

The first browser-based system for viewing multi-dimensional light microscope image data.

Original Data:

- Ensures integrity.
- Authors present their original data as acquired.
- Metadata are captured.

Multi-Dimensional Publishing:

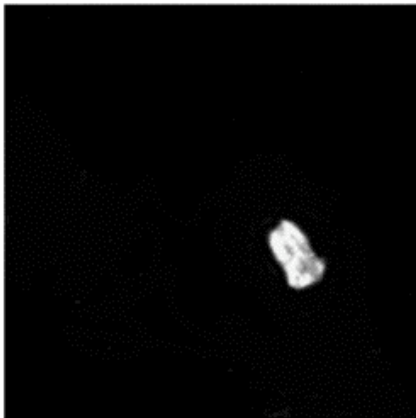
- Authors present their multi-dimensional microscope data.
- Users can interact with the data and perform simple analyses.
- Opens up a new dimension for online scientific publishing.

Data Sharing:

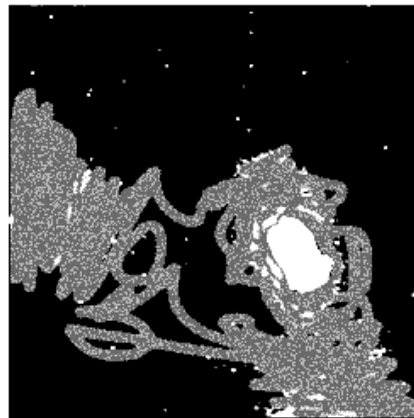
- Data are freely accessible after publication.
- In line with funding agency guidelines.

Original Data: Integrity

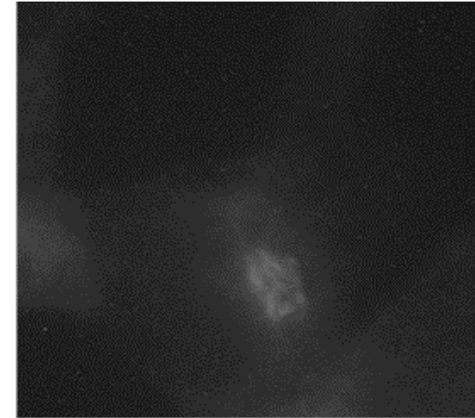
Submitted
Figure



Adjusted
Contrast



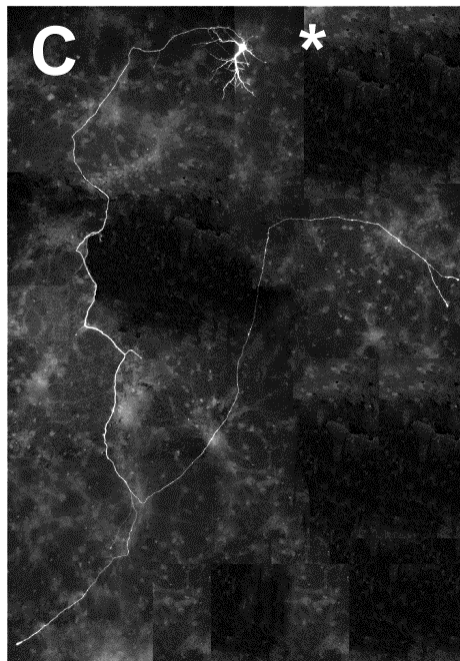
Original
Data



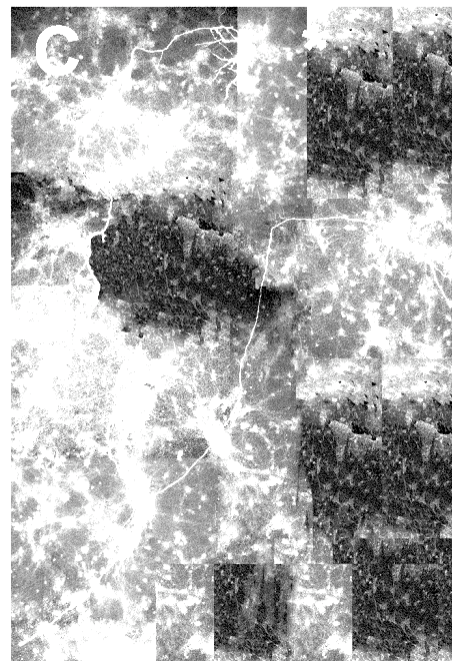
“we only wanted to show the actual data presented, and therefore, some parts of the figures were erased.”

Original Data: Integrity

Submitted Figure



Adjusted Contrast

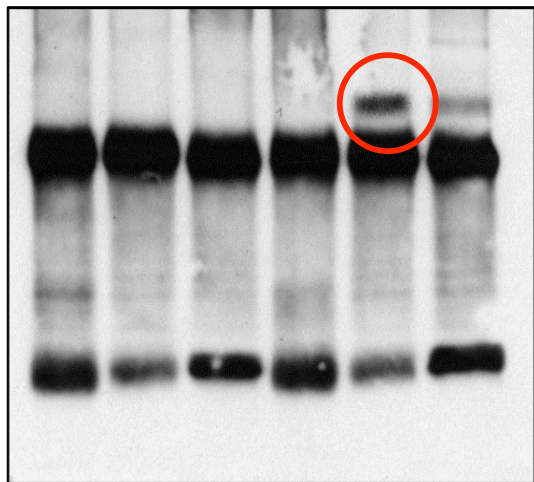


"We erased dirt (dust or dead neurites/cells) because of aesthetic reasons. In two cases near neurons have been carefully erased to provide an easier understanding of the axonal arbor."

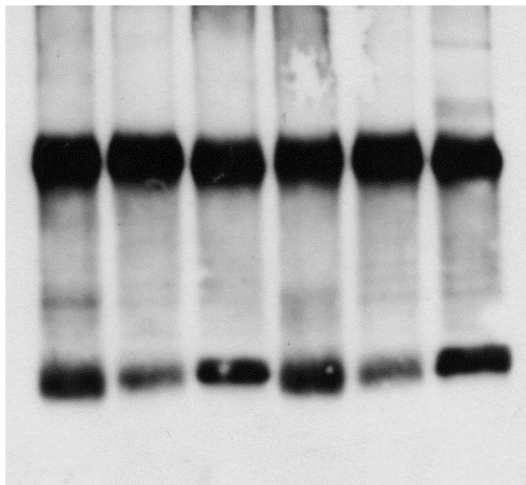
Original Data: Integrity

Submitted figure

B

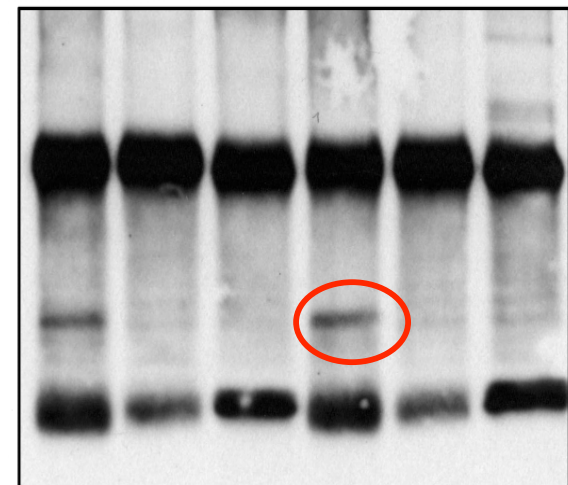


Original Data



Submitted figure

C



Original Data: Filetypes Supported

Format	Extensions
BioRad	.pic
Bitmap	.pic
DeltaVision	.dv, *.r3d, *.r3d_d3d
Digital Imaging and Communications in Medicine	.dicom, .dic, .dcm
Amersham Biosciences GEL	.gel
Graphics Interchange Format	.gif
Image Cytometry Standard	.ics, .ids
Bitplane Imaris	.ims
Improvision Tiff	.tif
Joint Photographic Experts Group	.jpeg, .jpg
Leica "lei" Format	.lei
Leica Image Format	.lif
Li-Cor L2D	.l2d

Format	Extensions
Metamorph	.stk
Nikon NIS-Elements	.nd2
Olympus FluoView FV1000	.oib, .oif
Openlab Raw	.raw
Openlab LIFF	.liff
PerkinElmer UltraView	.tif, .2, .3, etc
PICT (Machintosh Picture)	.pict
Portable Gray Map	.pgm
Portable Network Graphic	.png
Prairie Technologies TIFF	.png
Tagged Image File Format	.tif, .tiff
Visitech XYS	.xys
Zeiss LSM	.lsm
Zeiss AxioVision	.zvi

Multi-Dimensional Publishing

Benefits to Authors

- Showcase & discuss their data in 3D
- Data are linked to directly from the article
- Serves as an archived copy
- Conform to funding agencies requests for data sharing
- Viewers can't download data, they only have access to rendered JPEG.

Why have a fancy microscope if you can't publish the resulting data?

Multi-Dimensional Publishing

Adobe Acrobat Professional - [187.pdf]

File Edit View Document Comments Tools Advanced Window Help

Note Tool Text Edits Stamp Tool Show

Select Create PDF Comment & Markup Send for Review Secure Sign Forms

131% Find: Previous Next

Published October 15, 2007

This article has original data in the JCB DataViewer
<http://jcb-dataviewer.rupress.org/jcb/browse/105>

JCB: REPORT

Bod1, a novel kinetochore protein required for chromosome biorientation

Iain M. Porter,¹ Sarah E. McClelland,³ Guennadi A. Khoudoli,¹ Christopher J. Hunter,² Jens S. Andersen,⁴ Andrew D. McAinsh,³ J. Julian Blow,¹ and Jason R. Swedlow¹

¹Division of Gene Regulation and Expression and ²Medical Research Council Protein Phosphorylation Unit, College of Life Sciences, University of Dundee, Dundee DD1 5EH, Scotland, UK
³Chromosome Segregation Laboratory, Marie Curie Research Institute, Oxted, Surrey RH8 0TL, England, UK
⁴Center for Experimental Bioinformatics, University of Southern Denmark, DS-5230 Odense, Denmark

We have combined the proteomic analysis of *Xenopus laevis* in vitro-assembled chromosomes with RNA interference and live cell imaging in HeLa cells to identify novel factors required for proper chromosome segregation. The first of these is Bod1, kinetochores, suggesting that microtubule-kinetochore interactions were intact. Releasing Bod1-depleted cells from a monastrol block increases the frequency of syntelic attachments and the number of cells displaying biorientation defects. Bod1 depletion does not affect the activity

LOGY

187 (1 of 111)

The screenshot displays the JCB Data Viewer interface, which is a multi-panel web application. The main window shows the article title "Bod1, a Novel Kinetochores Protein Required for Chromosome Biorientation" by I.M. Porter et al. (2007). The article content is presented in a structured layout with sections for "Original Data" and "Legend".

Original Data:

- Figure 4 [5]
- Figure 5 [8]

Legend:

Figure 5. MCAK is not efficiently phosphorylated in Bod1 siRNA cells. (A) Aurora B is not delocalized in Bod1-depleted cells. Phospho-Ser10-histone H3 staining in control and Bod1 siRNA cells indicating Aurora B activity. (B-E) Cells were transfected with control or Bod1 siRNA. After 72 h, cells were treated with monastrol for 3 h and released into media containing MG132 for 1 h before fixing. (B and C) Cells were stained for total MCAK population, and levels at kinetochores were quantified. Boxed areas are

Figure 5:

Figure 5 consists of several panels (A-E) showing fluorescence microscopy images of cells. Panel A shows a cell with Aurora B (red) and histone H3 (green) staining. Panels B and C show cells treated with control siRNA and Bod1 siRNA, respectively, stained for total MCAK (red) and histone H3 (green). Panels D and E show cells treated with control siRNA and Bod1 siRNA, respectively, stained for phosphorylated MCAK (red) and histone H3 (green). The images show the localization of MCAK and its phosphorylation at kinetochores. A color scale bar is visible on the left of the main image in panel A. Below the main image, there are four smaller images showing boxed areas magnified.

The interface also includes a search bar, navigation buttons (Previous, Next), and a weather widget at the bottom right.

Multi-Dimensional Publishing

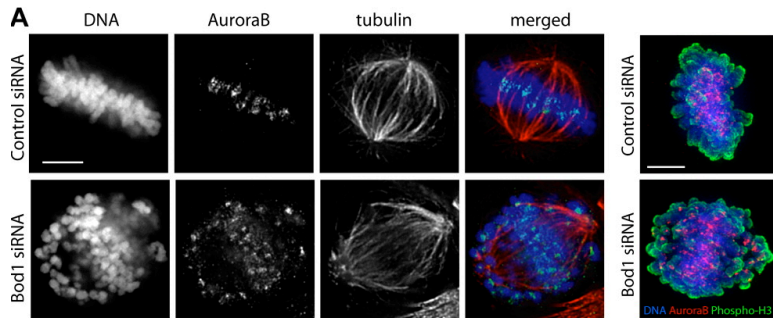
Benefits to Readers

- Access to the real data being presented
- Real-time interaction with the data (through z-stack and time axes)
- Perform simple analyses (line-plots, split channels...)
- Obtain metadata

The JCB Data Viewer

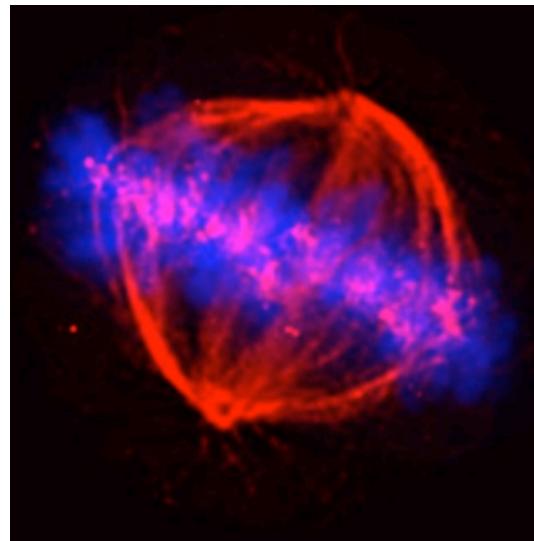
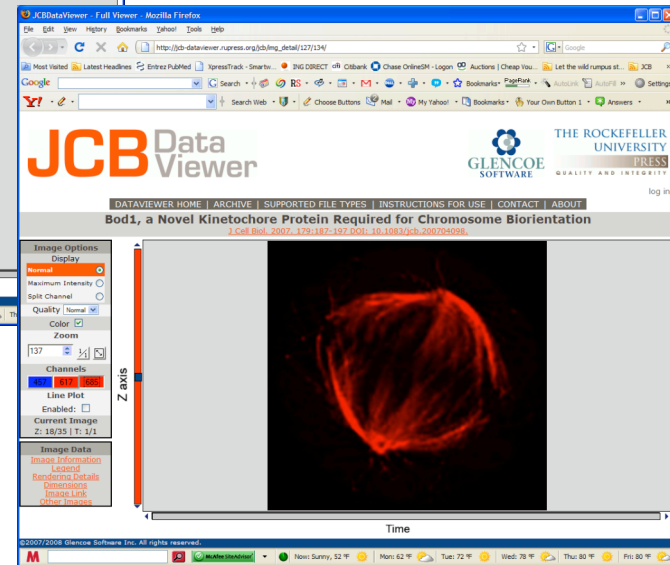
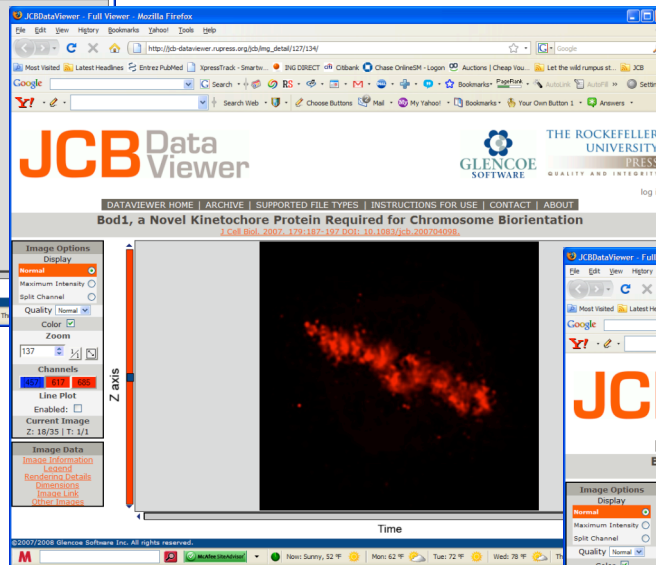
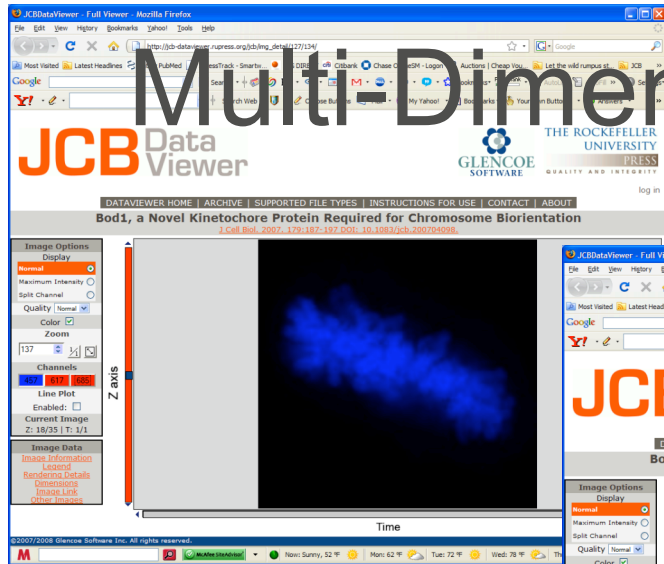
Multi-Dimensional Publishing

Figure 5



Porter et al., 2007 JCB Vol. 179,
No. 2, 187-197

Multi-Dimensional Publishing



Data Sharing: Funding agencies

The NIH

In NIH's view, all data should be considered for data sharing. **Data should be made as widely and freely available as possible while safeguarding the privacy of participants, and protecting confidential and proprietary data.** To facilitate data sharing, investigators submitting a research application requesting \$500,000 or more of direct costs in any single year to NIH on or after October 1, 2003 are expected to include a plan for sharing final research data for research purposes, or state why data sharing is not possible.

Data Sharing: Funding agencies

Wellcome: Policy on data management and sharing

1. ... the Trust wishes to ensure that the outputs of the research it funds, including research data, are managed and used in ways that maximise public benefit. The Trust considers that the **benefits gained from research data will be maximised when they are made widely available to the research community as soon as feasible, so that they can be verified, built upon and used to advance knowledge.**
2. ... the Trust **expects the researchers that it funds to maximise the availability of research data with as few restrictions as possible...**
3. ... it is good research practice for all researchers to consider at the research proposal stage how they will manage and share the data they will generate.

Data Sharing:

Funders guidelines strongly encourage data availability

Deposition of much biological data is required for publication.

Should this be standard for the publication of image data?

Precursor to an international repository of original image data?

How available should these data be. Only rendered JPEGs currently accessible. Should full access be granted?

Future Directions

Additional functionality

Greater access for the user?

Direct download from microscopes to the JCB DataViewer

Ability to access JCB DV data directly from Insight
OMERO client?

Adaptation by other journals

<http://jcb-dataviewer.rupress.org>

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The logo for The Journal of Cell Biology, featuring the letters 'JCB' in a bold, white, sans-serif font. The letters are contained within a white rectangular box that is part of a larger orange L-shaped graphic element.

THE JOURNAL OF CELL BIOLOGY

The logo for The Journal of Cell Biology (JCB) is located in the top-left corner. It consists of the letters 'JCB' in a large, bold, white, sans-serif font, set against a solid orange rectangular background. Below the letters, the full name of the journal is written in a smaller, white, sans-serif font.

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