

## Open Source BioImage Informatics: Tools for Interoperability

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### Abstract

Biological imaging has greatly advanced over the last thirty years with the now unprecedented ability to track biological phenomena in high resolution in physiologically relevant conditions over time and in space. As these imaging technologies mature and become main stream tools for the bench biologist there is great need for improved software tools that drive the informatics workflow of the imaging process from acquisition and image analysis to visualization and dissemination. To best meet the workflow challenges, these tools need to be freely available, open source, and transparent in their development and deployment. In particular it is clear that given the complexity, and heterogeneity of the modern image dataset, there can not be a single software solution. Different imaging processing and visualization approaches need access not only to the data but to each other. There needs to be compatibility not only in file import and export but interoperability in preserving and communicating what was done to the image. There is a great opportunity in achieving this interoperability, tools that can talk to each other not only enable new biological discovery but also efficiencies in sharing code and in many cases more precise workflows. We present our efforts towards interoperability in the FIJI and Open Microscopy Environment consortiums. The consortiums are actively developing key software libraries like ImgLib and Bio-Formats that are utilized in dozens of software applications to parse and visualize biological image data, to the developmental benefit of not only of the applications but the libraries themselves.

### Biography



Kevin Eliceiri received his undergraduate and graduate training in Microbiology and Biotechnology at the University of Wisconsin in Madison. He worked in the R.M. Bock laboratory developing imaging approaches for the model nematode *C. elegans*. He received further post-graduate training at the National Integrated Microscopy Resource (Madison, Wisconsin) in the area of computer science and microscopy. Since 2000 he has been at the Laboratory for Optical and Computational Instrumentation (LOCI) at the University of Wisconsin at Madison. He is currently director of the LOCI and a Principal Investigator in the Laboratory of Molecular Biology at the University of Wisconsin in Madison Graduate School. He holds research investigator appointments in the Departments of Biomedical Engineering and Medical Physics and is a full investigator in the University of Wisconsin Comprehensive Cancer Center. His current research focuses on the development of novel optical imaging methods for investigating signaling and cell interaction in development and disease processes, and the development of software for multidimensional image informatics.