BioXFEL, a National Science Foundation Science and Technology Center to develop Biological Applications of X-ray Free Electron Lasers.

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Biology with X-ray Free Electron Lasers (BioXFEL) is a Science and Technology Center established by the National Science Foundation in 2013. Composed of eight U.S. research universities and aimed at addressing the fundamental questions in biology at the molecular level. Using a pulsed hard X-ray laser, our researchers can capture biological molecules in atomic detail, view their functional motions by taking brief snapshots, and observe interactions in their native environment. This opens up a new world to biology, to science, and to human health.

The mission of the National Science Foundation BioXFEL Science and Technology Center is:

- To watch biomolecular machines at work, using X-ray lasers to better understand how life works at the molecular levels.
- To understand how these molecular machines support life on earth.
- To invent, discover, develop and provide new tools and training for doing so for the wider scientific community.

BioXFEL is spread across eight research institutions, and relies on a large national facility at the SLAC national laboratory to achieve many of its experimental goals. These goals include a set of deliverables that have the potential to transform structural biology as we know it, and to develop tools that will make this new style of structural biology broadly available. The distributed structure of BioXFEL presents a number of operational challenges that also represent opportunities to develop new mechanisms of training and communication. Part of this communication is an annual meeting bringing together BioXFEL members and those from the international community of Biological XFEL researchers to develop collaborative ideas, build the community and train the next generation of scientists to make use of the unique capabilaies of XFEL research.

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