

Building a Sustainable Bioinformatics Program Through Integrated Support

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The rapid growth of advanced computational research methods being applied across the sciences increasingly demands support beyond the capabilities of the average informational technology (IT) department. Nowhere is this more evident than in the field of bioinformatics. The necessary cyberinfrastructure - both hardware and people - must be highly specialized, but also diverse, to meet the needs of a broad range of users and applications.

The Office of Cyber Infrastructure and Computational Biology (OCICB) at the National Institute of Allergy and Infectious Diseases (NIAID), part of the U.S. National Institutes of Health (NIH), coordinates IT resources and training for a staff of over 4000 people, including over 2300 research scientists and scientific support staff located in the US and abroad. The mission of OCICB is to strategically enhance the Institute's capabilities in clinical informatics and bioinformatics, and ensure that NIAID researchers can access and fully utilize the most advanced bioinformatics tools available.

To accomplish this, OCICB brings together a multidisciplinary teams of engineers, developers, analysts, and specialists to provide a broad suite of scientific services and resources tailored to the NIAID research community. Highly-trained, doctoral-level research scientists are embedded throughout OCICB, specializing in structural biology, biostatistics, phylogenetics, systems biology, and the many 'omics fields. By including these subject matter experts within day-to-day operations, OCICB ensures that the needs of the primary end users - NIAID research scientists - will be met.

This collaborative approach has been critical to the success of OCICB. For example, it was the computational biologists at OCICB who advocated for the creation of a high-performance computing cluster when they recognized the potential impact of next generation sequencing when it first became commercially available in 2005. The NIAID cluster provides robust, reliable, cost-effective, and scalable infrastructure. As additional compute power becomes a

necessity, just-in-time modular upgrades provide continuous improvement and up-to-date systems, as opposed to filling rack space with outdated, unused servers.

Researchers were polled on an Institute-level to determine unmet needs in using the data center. Based on the feedback provided, training series were to address need gaps.

Additionally this feedback has helped OCICB focus on up and coming research areas. By reaching out to stakeholders in early stages and creating pilot programs, OCICB is able to get ahead of the curve to provide transformational tools, allowing organic growth is able to take place.