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## UC San Diego Awarded NIH Grant to Expand Diabetes and Obesity Research Hub

### SDSC to Provide Computational Resources and Host Research Database

Researchers at the University of California, San Diego have been awarded a new National Institutes of Health (NIH) grant to expand and enhance a cyberinfrastructure designed to provide scientists with easily accessible, Web-based resources to help fight diabetes and metabolic diseases.

The grant, awarded through the university's Center for Research in Biological Systems ([CRBS](#)), will focus on establishing, coordinating, and making available large pools of datasets to researchers as part of a project to further develop the National Institute of Diabetes and Digestive and Kidney Diseases' ([NIDDK](#)) Interconnectivity Network community and infrastructure.

About 25.8 million children and adults in the United States, or 8.3% of the population, have diabetes, according to the [American Diabetes Association](#). [Obesity](#) has been cited as a contributing factor to approximately 100,000 to 400,000 deaths in the U.S. each year.

Established in 2010, a prototype of the current system called dkCOIN was initially created to explore requirements for information sharing between four NIDDK-supported consortia, including the Nuclear Receptor Signaling Atlas ([NURSA](#)), the Beta Cell Biology Consortium ([BCBC](#)), the Mouse Metabolic Phenotyping Centers ([MMPC](#)), and the Diabetic Complications Consortium ([DCC](#)).

The new NIH grant will allow UC San Diego researchers to expand the data federation and develop and enhance a user-friendly Web portal that will seamlessly integrate information, resources, and data held by NIDDK-related research groups, with the goal of providing a valuable resource for NIDDK investigators.

The award builds upon the Neuroscience Information Framework ([NIF](#)), an initiative of the NIH Blueprint Consortium of neural institutes. The NIF is a biological search engine that provides a broad, searchable inventory of resources (data, tools, materials, services) enabling researchers, students and educators to pull together information about the nervous system.

The NIF project is also housed at CRBS, and its infrastructure is hosted at the San Diego Supercomputer Center (SDSC), which like the CRBS is an Organized Research Unit of UC San Diego. Since its launch in 2008, the NIF has assembled the largest searchable resource catalog and data federation available on the web.

Under the new NIH award, efforts will also focus enhancing the analytical capabilities of the portal through the creation of workflows, such as SDSC's [Kepler project](#), using tools familiar to the NIDDK community and utilizing SDSC's data-intensive [Gordon supercomputer](#), and the SDSC [Cloud](#) data storage system to make datasets accessible via the portal to ensure that the network is sustainable beyond the term of the award.

“With this award we have a unique opportunity to extend and enhance dkCOIN through the use of the NIF infrastructure and its data resources,” said Maryann Martone, professor at UC San Diego’s Department of Neuroscience and principal investigator for the new project. “The NIF was designed to break down silos of information through its novel data federation of technology and concept-based search. There is growing awareness of the link between metabolic function and nervous system function.

“We don’t believe that there are neuroscience resources or NIDDK resources, just biomedical resources that can be used by whatever community requires them,” added Martone. “The body does not draw rigid distinctions between the nervous and metabolic systems and neither should our information systems. By building a new portal that accesses a shared resource pool, both communities will benefit. ”

“With the expanded resource set, we can develop tools to more effectively connect researchers with relevant resources to support their research,” said Jeffrey S. Grethe, associate director of scientific operations at CRBS and the project’s co-PI. “By building on the NIF we are providing a cost-effective and innovative means to advance discovery science by providing a platform for cross-domain data mining while providing a sustainable model for future expansion.”

Martone and Grethe will collaborate with several researchers in UC San Diego Health Sciences, including Susan Taylor, Kumar Sharma, and Nuno Bandeira from the proteomics center, in addition to SDSC staff and researchers.

“It is very gratifying to see that in a relatively short period of time, the Neuroscience Information Framework project has grown to become the largest integrated system for neuroscience and is reaching out to other areas of biomedicine,” said SDSC Director Michael Norman. “We are delighted to provide our expertise and resources in computation and data platform requirements to this new project.”

The NIDDK Interconnectivity Network Coordinating Unit project was awarded under NIH grant number 1U24DK097771-01.

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