



July 2019

The mission of NCCAT is twofold: to provide nationwide access to advanced cryoEM technical capabilities, and to assist users in the development of cryoEM skills needed for independent research. NCCAT provides access to state-of-the-art equipment required to solve structures to the highest possible resolution using cryoEM methods. Supported by the NIH Common Fund Transformative High Resolution Cryo-Electron Microscopy program (U24 GM-129539).

### Story of the Month: The Resolution is Coming



In research science, planning an experiment is not unlike chess, it requires a lot of careful advanced planning along with the ability to improvise when something develops differently from what you were expecting. At least that how molecular biologist Pramod Kumar from the University of Illinois views it. Pramod was actually a chess champion when he was an undergrad back in India, and the similarities of patience and preparation needed for each is not lost on him.

Now, Pramod is a post-doctoral researcher in Professor Claudio Grosman's lab at the University of Illinois at Urbana Champaign (UIUC). There his studies are focused on ion-channel structure.

As early as high school Pramod had been interested in membrane proteins and intrigued by their selective permeabilities to solutes, their exquisite ligand-binding affinities, and their ability to sense the voltage across the membrane. Although the Grosman Lab has significant expertise in electrophysiology, they wanted to use cryoEM to understand the structure of the ion channels and thus develop a better understanding of the function of these membrane proteins.

As an embedded scientist at NCCAT Pramod wanted to learn about sample preparation and optimization, data collection and data processing. He arrived with very little previous experience and was afraid that becoming an independent user in one month was a really lofty endeavor. He found the training plan surprisingly efficient and just 25 days after his arrival, he spent two days collecting data using a grid he had prepared himself and was able to reconstruct a map of a lovely ion channel to resolution of 2.6Å!

The TP1 program at NCCAT is designed to train scientists to become independent cryoEM researchers by providing access and training during an intensive immersion program, usually over a period of about 3 months. As an early access embedded scientist, Pramod had to learn the ropes in just 1/3 of that time.

If you are interested in applying to the TP1 program please visit the [NCCAT website](#) for instructions!

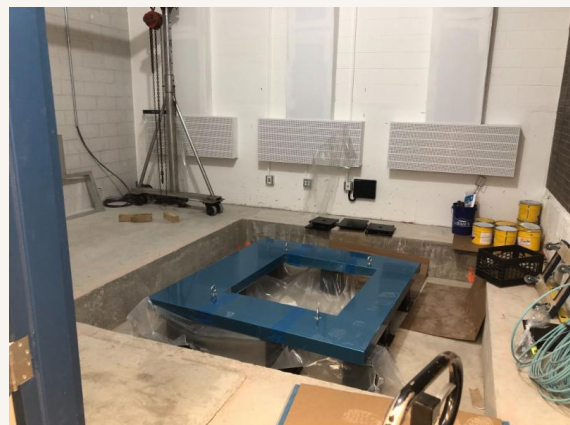
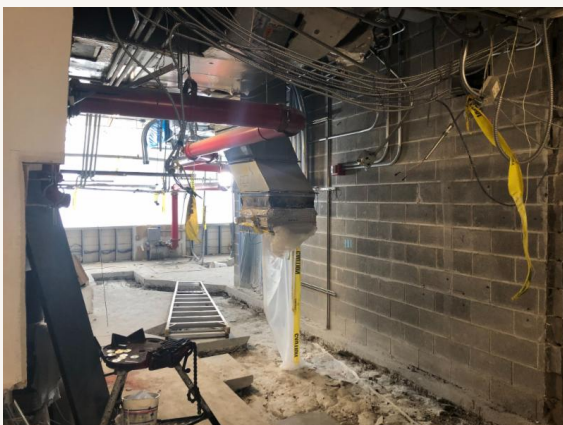
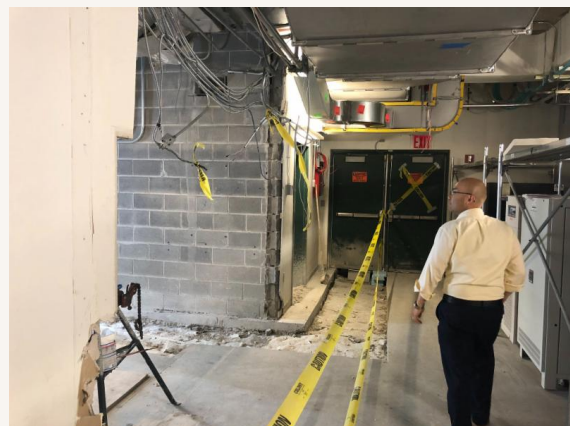
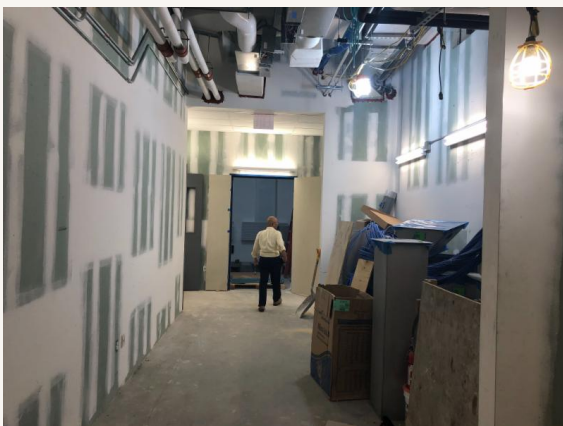
## Construction Updates

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Air handler tests were a success and then the contractors chopped upwards of concrete (using very loud jackhammers) to lay pipes for the new bathrooms in the NCCAT area.

In the next few weeks the construction crew will cut through the wall from the mechanical room to the SEMC Helios hallway. More Jackhammering to come!

The construction will be finished by the end of August.



## NCCAT in OKC!

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The Central IDEa Regional Meeting was held in Oklahoma City on June 12-14. Ed Eng and Elina Kopylov attended the conference to promote NCCAT to states

that are underrepresented in NIH funding.



## Submit Your Proposal to NCCAT



### **NCCAT GUP1 PROPOSAL SUBMISSION**

The **GUP1 early access program** supports single particle cryoEM data collection on one of our existing Titan Krios instruments using a Gatan K2 direct-electron detector.

**[Submit Now!](#)**

### **NCCAT GUP2 PROPOSAL SUBMISSION**

The **GUP2 cycle** supports use of Chameleon (the commercialized version of Spotiton) and an exploratory screening microscope session.

**[Submit Now!](#)**

### **NCCAT TP1 PROPOSAL SUBMISSION**

The **TP1 cycle** supports embedded scientist training.

**[Submit Now!](#)**

### **NCCAT TP2 PROPOSAL SUBMISSION**

The **TP2 cycle** supports facility manager training

**[Submit Now!](#)**

## Career Opportunities

### **Research Associate & Staff Scientist**

We are seeking an experienced electron microscopist to join the NCCAT team. The individual will be responsible for collection of high-resolution data for NCCAT users and also support our cross-training efforts. Responsibilities will include: operation of screening and high-end microscopes, specimen preparation (negative stain, vitrification, Chameleon), image analysis, processing and 3D reconstruction, one-on-one training of embedded scientist, feedback to users. Opportunities for collaborative research are available through the Simons Electron Microscope Center.

Apply for [Research Associate](#) or [Staff Scientist](#) on Indeed

[VISIT OUR WEBSITE](#)

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