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**M** UNIVERSITY OF MICHIGAN  
NORTH CAMPUS RESEARCH COMPLEX



**momentUM**  
ncrc newsletter



As research grows at NCRC, we are gratified to watch the strides taken by young researchers. This month, we hear from one of the post-doctoral fellows in the Department of Computational Medicine and Bioinformatics.

The Biointerfaces Institute at NCRC recently hosted a collaborative workshop that brought together engineers and physicians to find ways detect rare disease cells in the bloodstream.

Good news for all those who take a bus to and from NCRC, and those who have considered doing so but haven't yet. With an increased frequency of the Researchlink bus, it's now even easier than before to commute between NCRC and the medical and

engineering campuses, and the VA Hospital. We are confident that this will only increase research productivity.

[David Canter](#), Executive Director, NCRC

## Young Researchers Thrive at NCRC

*David Shultis, Post-doctoral Research Fellow (Zhang labs), Department of Computational Medicine and Bioinformatics talks about his lab*

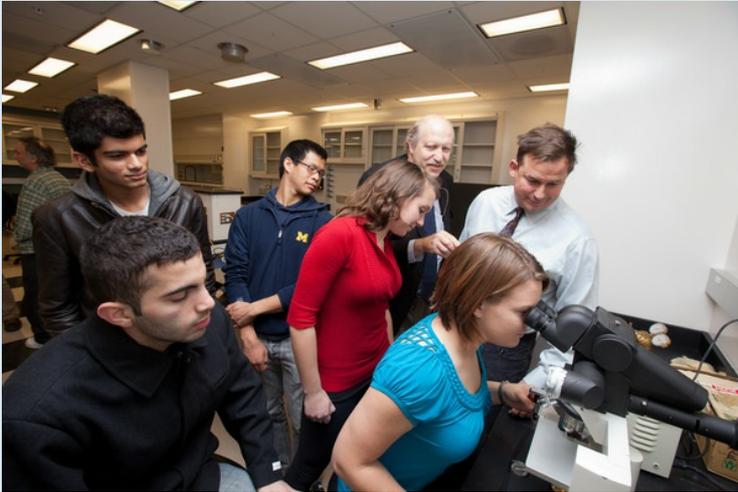
### *On what his lab does*

We make small things! We are creating a computational protein engineering platform with two main goals. The first goal is to develop novel macromolecules (proteins) useful in medicine & research that would be extremely hard to design using other protein engineering methods. The second goal is to improve our understanding of the protein folding process. We are utilizing state-of-the-art algorithms from the Zhang lab protein structure prediction method I-TASSER which has won the CASP worldwide protein structure prediction competition for the last 8 years. Since protein design and protein structure prediction are inverse processes, it seems likely we may be able to make significant gains in the field of protein design. The current focus is on a protein called XIAP that is involved in regulating whether a cell will live or die. The designed XIAP 'like' proteins will be useful in cancer, and heart disease models for drug discovery efforts.

### *Collaborations*

We are currently submitting for publication three papers related to the XIAP project-after starting the lab only a year ago. Our success has come as a result of the strong departmental support lead by Brian Athey and Gil Omen, the outstanding facilities of the NCRC and wonderful collaborative environment of U-M. The great thing about Michigan is that we have been able to create strong collaborations with several groups that have enriched our experimental approach, as well as saved us money and resources. The other wonderful aspect of being at Michigan and the NCRC is that the core facilities are excellent. This has enabled us to rapidly test our design proteins, validate our method, and present it for public use.

### *Undergraduate students in labs*



We are very happy to have had a large number of such phenomenally talented undergraduate UROP students (over 20) working in our lab over the last two years. These students are designing, making, and performing limited testing of the target proteins. Notably, several of these students have returned to train the newer students making the research more accessible. The students can work at the bench, make mistakes and learn from them. This research program creates increased awareness of the NCRC among the UM undergraduate student body that

*David Shultis (right) instructing UROP students in his lab*

should yield long term gains with respect to small business and research incubator programs. Importantly, the UROP program has been very supportive of this research. I am hopeful that NCRC will take a more active role in supporting undergraduate student summer research programs that emphasize interdisciplinary collaborative research efforts, specifically between labs at the NCRC.

### *On being at NCRC*

We have been at NCRC for over a year now. I am extremely impressed with how well the complex is taken care of and managed by the facilities team. I appreciate the security on this site, an important factor for young students to come here. Bus transportation is very convenient, consistent and on time. We frequently use the core services located at NCRC such as DNA Sequencing. Most importantly, we have been able to reach out to faculty members and researchers at NCRC, such as Margaret Westfall in the Cardiovascular Research group. We are hopeful that as more groups move to NCRC, and we continue to develop and validate our protein design/engineering platform that we can work together to create cutting-edge advances in medicine. We want to help make your research better!

### *On making connections*

The NCRC momentUM newsletter, where information about our lab's work was published in the past, has been very effective in connecting us with faculty members and researchers, and we hope that it will continue to be the case going forward!

## **Rare Cell Detection Workshop Brings together Scientists, Engineers and Doctors**

*Biointerfaces Institute at NCRC exemplifies collaboration by hosting a unique workshop*

How can university scientists and biotech companies work together to develop new ways to detect rare disease-related cells and particles in the bloodstream or tissues?

That search for the "needle in the haystack" of the human body was the key issue at a two-day workshop held in January 2013 by the U-M Biointerfaces Institute, based at the North Campus Research Complex.

## **Commuting To and From NCRC is Now Easier Than Ever**

*Increased Researchlink bus frequency will positively impact researchers*

Over the last three years since the first move-ins, and especially with the growth of research activity, NCRC has continued to provide excellent infrastructure support for research on its site. One of the unique aspects of NCRC is the confluence of researchers from different parts of the university. Most of these researchers continue to maintain strong connections with their home schools and departments for their research, frequently traveling back and forth.



It brought together dozens of U-M researchers from the Medical School, College of Engineering and other schools, and representatives from an array of local and regional biotech firms.

U-M clinician-researchers spoke about the need for better detection of rare but important cells and particles in the diseases they treat, and small group discussions about ways to detect circulating tumor cells, inflammatory cells, pathogenic cells and fractionated pluripotent stem cells.

The discussion wasn't just academic -- the institute is offering a total of \$100,000 in seed funding grants to help U-M teams start projects that address issues in rare cell and particle detection. Biotech companies may also be interested in adapting their existing technologies to solve issues related to cell and particle detection in specific diseases.



The successful workshop is the latest in a series sponsored by the Biointerfaces Institute, which addresses issues at the boundaries of life sciences, physical sciences and engineering.



Co-organizer John Younger, M.D., Emergency Medicine, called it "clearly the most interdisciplinary life sciences event held at U-M in recent memory."

For more on biointerfaces research at U-M and NCRC, see

Especially in the last year, NCRC has seen a substantial growth in both dry and wet lab research. The community of faculty members, researchers, students and staff members has grown and many of them regularly commute to other parts of the university.

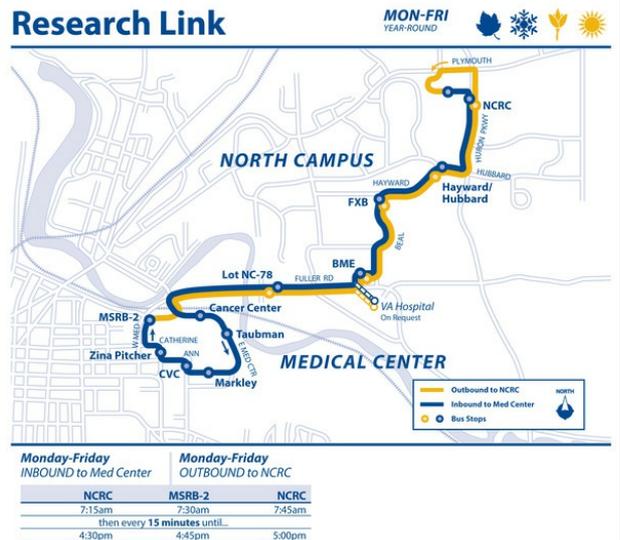
Researchlink is one of the main bus routes that connects NCRC to the Medical and the North Campus. To meet the transportation needs of the researchers, the frequency of Researchlink was recently increased to every 15 minutes from the earlier frequency of every 30 minutes.



It is expected that a more frequent bus service will facilitate more efficient interactions between NCRC and the rest of the university. Of particular importance is the connectivity that the Researchlink provides to the Engineering School, the VA Hospital and the Medical School.

To learn more about each route, see the information below or check the [Parking & Transportation Website](#).

- [NCRC to North Campus \(PDF\)](#)
- [NCRC to the Medical Campus \(PDF\)](#)
- [NCRC to Central Campus \(PDF\)](#)
- [NCRC to South Campus \(PDF\)](#)



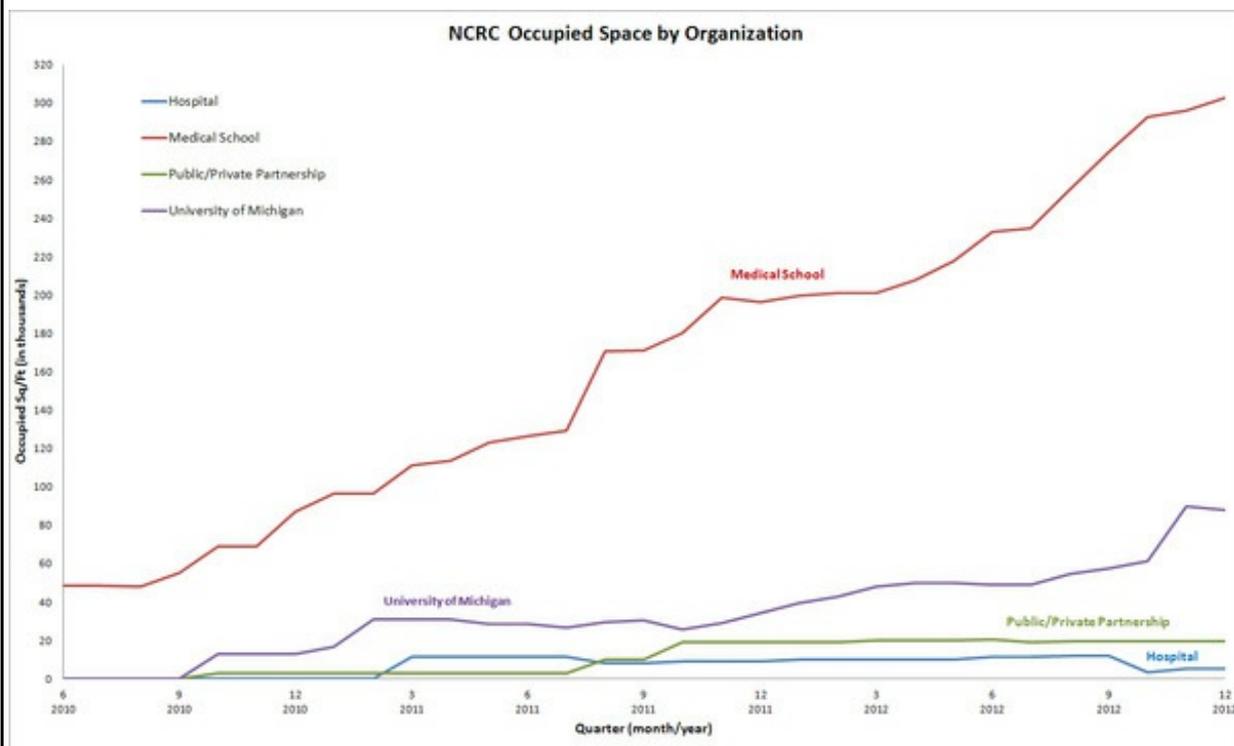
Another report on this workshop is available at the U-M [College of Engineering website](#).

[Magic Bus](#) is another quick and easy way to actually see when the next bus is arriving at NCRC!

# NCRC Metric: Indicators of Progress

A look at the data from the end of the calendar year 2012 shows that the U-M Medical School continues to be the largest space user at NCRC. Several research as well as administrative groups that are a part of the Medical School are located at NCRC. This trend is a natural outcome of the nature of the facility and labs at NCRC and the research programs that have been located here.

In addition to the Medical School, several other U-M schools and departments also have a presence at NCRC through faculty member primary and joint appointments. Public private partnerships include the companies in the U-M Venture Accelerator and the VA/IHPI groups.



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