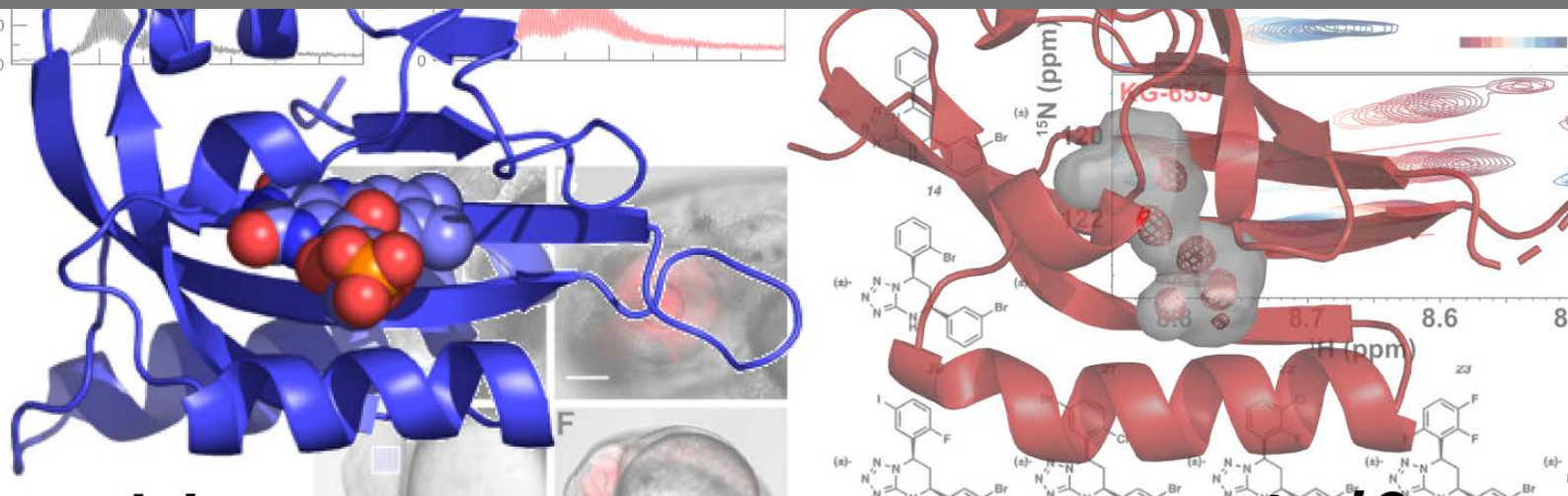


STRUCTURAL BIOLOGY INITIATIVE

ADVANCED SCIENCE RESEARCH CENTER



MESSAGE FROM THE DIRECTOR

Spring has returned again, bringing with it a sense of renewal – not just in the annual seasonal cycle, but this time also in the prospects of us all perhaps returning back to something reminiscent of the times before COVID arrived in early 2020. I'm wary of using the word "normal" to describe what we're heading towards, in large part out of respect for those who've lost family, friends, jobs, and other fundamentals along the way. That said, I am hopeful with what lies ahead. Science has brought us ways to combat COVID in record time, and within our local corner of the world, brought us something positive to focus on even when the going seemed bleak.

I'm incredibly proud of everyone in SBI, and ASRC more broadly, in safely getting us back up to speed and operating as best possible during this challenging time. Much of what we've achieved then is shared in this newsletter, which I'm proud to share with the community. I'm also hopeful that lessons learned over the past fifteen months may be retained in thinking of better ways we can do science going forward – particularly in thinking how we can share some of what we've built here with a broader community, and how we can in turn learn from and work with others who aren't in our immediate neighborhood. Looking forward to continuing towards those and other goals in the months ahead –Kevin Gardner

Administrative Contacts

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ARTICLES IN THIS ISSUE:

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Seminar in Biochemistry,
Biophysics and Bidesign

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NEW LAB MEMBERS AND FACULTY

The Structural Biology Initiative is happy to welcome new students this year:

Andres Cabezas (*des Georges Lab*), PhD student in Biochemistry

Priyasha Deshpande (*Elbaum-Garfinkle Lab*), PhD student in Biochemistry

Shivani Sharma (*Keedy Lab*), PhD student in Molecular, Cellular, and Developmental Biology

James Siclari (*Gardner Lab*), PhD student in Molecular, Cellular and Developmental Biology

Virgil Woods (*Keedy Lab*), PhD student in Biochemistry



new X-ray crystallography facility from scratch. Formally trained as a enzymologist and structural biologist, with undergrad studies at Indiana University and PhD work with Adrian Keatinge-Clay and Hung-wen Liu at UT Austin, Eta has distinguished herself with outstanding initiative at bringing structural biology research to biochemistry and cell biology labs, and further, in developing novel undergraduate teaching components in this interdisciplinary area.

We are excited that **Dr. Eta Isiorho** joined us in June 2020 as a Research Assistant Professor and Facility Manager for the Macromolecular Crystallization Facility. Eta comes to us from Auburn University, where she established a

PUBLICATIONS

Beckwith, et al. [Johnson Lab] RING NMR dynamics: software for analysis of multiple NMR relaxation experiments. *J Biomol NMR*, 2020. DOI: 10.1007/s10858-020-00350-w

Fisher, et al. [Elbaum-Garfinkle Lab] An Apparent Core/Shell Architecture of PolyQ Aggregates in the Aging *C. Elegans* Neuron. *Protein Science*, 2021. DOI: 10.1002/pro.4105

Hart and Gardner [Gardner lab] Lighting the way: Recent insights into the structure and regulation of phototropin blue light receptors. *J. Biol. Chem.*, 2021. DOI:10.1016/j.jbc.2021.100594

Kazemi et al. [des Georges Lab] ENRICH: A fast method to improve the quality of flexible macromolecular reconstructions. *Prog Biophys Mol Biol*. 2021 ; DOI: j.pbiomolbio.2021.01.001

LaBelle et al. [Gardner lab] TAEI 2.0: An improved optogenetic expression system for zebrafish. *Zebrafish*, 2021. DOI:10.1089/zeb.2020.1951

Riley BT, et al. [Keedy Lab] qFit 3: Protein and ligand multiconformer modeling for X-ray crystallographic and single-particle cryo-EM density maps. *Protein Science*, 2020, 1-16.

Veerassamy, et al. [Abzalimov Lab] Sample Preparation for Metabolic Profiling Using MALDI Mass Spectrometry Imaging. *JoVE*, 2020, DOI: 10.3791/62008.

Xu et al. [Gardner lab] Fragile protein folds: Sequence and environmental factors affecting the equilibrium of two interconverting, stably folded protein conformations. *Magn. Reson.*, 2021. DOI:10.5194/mr-2-63-2021

Xu et al. [Gardner lab]. Volume and compressibility differences between two stably folded protein conformations revealed by high pressure NMR. *Biophys J*, 2021. DOI:10.1016/j.bpj.2020.12.034

STUDENT ACHIEVEMENTS AT A GLANCE:

ROKSANA AZAD (GARDNER LAB) IS A RECIPIENT OF AN NIH F31 PREDOCTORAL AWARD.

MATT CLEERE (GARDNER LAB) WAS ELECTED TO THE GC GRADUATE COUNCIL

ZAYNAB JABER (GARDNER LAB) WAS AWARDED THE GRADUATE CENTER ERI CATALYST GRANT

TAMAR SKAIST (KEEDY LAB) IS A RECIPIENT OF THE GRADUATE CENTER'S DISSERTATION YEAR FELLOWSHIP AND DE SHAW RESEARCH GRADUATE & POSTDOC WOMEN'S FELLOWSHIP

CONGRATULATIONS!

SPOTLIGHT ON THE NMR CORE



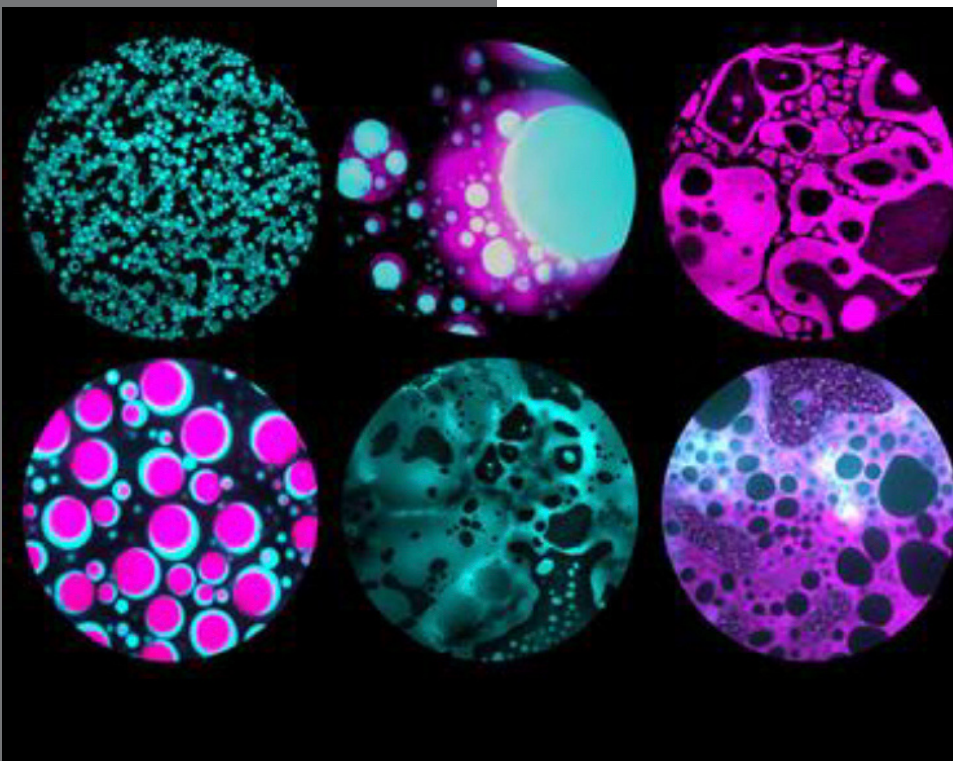
JIM ARAMINI WILL BE LEAVING SBI
IN JUNE - THANK YOU JIM FOR ALL
YOU HAVE DONE!

PLEASE JOIN US IN WISHING JIM
THE BEST!

Established in the fall of 2015, the ASRC Biomolecular Nuclear Magnetic Resonance Facility features three state-of-the-art Bruker AVANCE III HD NMR spectrometers operating at 600, 700, and 800 MHz. All three spectrometers are equipped with cryogenically-cooled probes for sensitive ^1H , ^{13}C , ^{15}N , ^{19}F , and ^2H NMR capabilities, as well as robotic sample changers to facilitate remote operation. Additional technical capabilities include solid state NMR at 600 MHz (Phoenix 1.7mm HXY MAS probe), high pressure solution NMR, and two lasers for photobiology and photochemistry studies. Taken together, the facility serves numerous academic users within the CUNY system, the tristate area and far afield, as well as small industry users in the NY/NJ area.

We also have the bittersweet news to share that our facility director **Jim Aramini** will be leaving SBI in June to take another position back in his native Canada. Jim's been integral to our facility since its earliest days, turning an empty room into the first of three smoothly-running, state-of-the-art facilities in SBI. Initially envisioned as a standard solution

biomolecular NMR facility, Jim's worked to substantially extend its capability in collaboration with users who've wanted to incorporate other approaches from solid state NMR to high pressure to laser illumination in their work, touching on areas from protein structure and dynamics to battery design. More recently, Jim's spearheaded the installation of NYC's first helium recovery system for a NMR facility, all while coming into the ASRC on a daily basis during COVID to ensure that his facility kept running smoothly for a mix of academic and industrial customers. Best wishes to Jim in his new opportunity!



AWARD WINNING PHOTO

The Biophysical Society's Annual Art of Science Image Contest took place online this year, during the 65th Annual Meeting. The first place winning image was submitted by **Rachel Fisher**, a Postdoctoral Research Associate in Shana Elbaum-Garfinkle Lab.

Congratulations, Rachel!



SPOTLIGHT ON...

Harsh Bansia, Postdoctoral Research Associate, des Georges Lab

-How long have you been with SBI?
I am with SBI for about a year now.

-What was your previous academic and research background?
I obtained my B.Sc. and M.Sc. in Biotechnology from Jiwaji University and received my PhD in Structural and Computational Biology from Department of Physics, Indian Institute of Science, India. During PhD, I developed a strong background in X-ray crystallography, computational modeling and molecular dynamics simulations while studying cryptic allosteric features of proteins with implications in substrate recognition, catalysis and drug-design.

-What are you working on now?
I am interested in studying the structure-dynamics-function correlation of proteins in order to understand their working mechanisms. To this end in Dr. Des Georges lab, I am using cryo-electron microscopy with molecular dynamics simulations and machine learning based

microscopy image analysis to experimentally determine the relevant.

What is your favorite thing about NY?
Riverside state park and easy access to any part of the city through Subway.

SEMINAR IN BIOCHEMISTRY, BIOPHYSICS AND BIODESIGN

This seminar has met virtually through the 2020-21 AY with an impressive slate of speakers. The weekly seminar on Wednesdays at 12pm will continue in the Fall 2021 semester. To find out more about upcoming seminars and to join the mailing list, please contact Hyacinth Camillieri at hcamillieri@gc.cuny.edu.

UPCOMING EVENTS

JUNE 4: CCNY VIRTUAL COMMENCEMENT

JUNE 25: BIOPHYSICS SYMPOSIUM

AUGUST 25: FIRST DAY OF FALL 2021 SEMESTER

ENJOY THE SUMMER!

WE ARE LOOKING FORWARD TO SEEING EVERYONE ON CAMPUS THIS FALL!

