



In the Loop

Spring 2022

\$1 Million Earmark Approved for Next Generation RNA Technology Projects



Director Andy Berglund thanks Congressman Paul Tonko (pictured middle), President of UAlbany Havidán Rodríguez (pictured left) and others for their support in successfully obtaining the one million dollar earmark for the Next Generation RNA Technology Project.

On March 23, 2022, Congressman Paul Tonko announced a million dollar earmark for the RNA Institute, which will provide funding for the next generation of scientific equipment. This package ensures that Institute researchers will continue to have access to cutting edge RNA Technology. This funding would not have been possible without the tireless efforts of the COVID-19 surveillance lab at the RNA Institute. During the pandemic, the lab has analyzed more than a quarter of a million saliva samples, which has helped reduce the spread of COVID-19 in the capital region.

The ongoing COVID-19 pandemic has shined a bright light on the importance of RNA as both the genetic material underlying the SARS-CoV-2 virus and the COVID-19 vaccine. This next generation funding package will help support our continuing

efforts to analyze variants of the COVID-19 virus, study the mechanisms of SARS-CoV-2 biology and broadly support the Institute's work in studying RNA and developing RNA as a tool for human health. On the COVID-19 variant front, we are collaborating with Upstate Medical College (specifically Dr. Frank Middleton) to sequence COVID-19 variants collected from SUNY campuses across NY state. Analysis of the COVID-19 variants helps us to understand how different variants dominate each campus at different times during the pandemic and provide vital information to help guide the response of SUNY and UAlbany during the pandemic. In addition to supporting COVID-19 research, the equipment purchased by the earmark will be used to support research at the Institute into muscular dystrophy, cellular biology, RNA chemistry and a wide range of other important RNA research topics.



RNA Institute COVID-19 Surveillance team members with Congressman Paul Tonko, UAlbany President Havidán Rodríguez and Jeanette Altarriba, Dean of College of the Arts and Sciences during the press conference of Congressman Tonko's earmark announcement on March 23, 2022.

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Stranded in Science: A Panel Discussion on Various Pathways in STEM

Six panelists, spanning a spectrum of STEM professions (see figure below) joined us on June 14, 2022 at the RNA Institute for a STEM career panel. Panelists discussed their career trajectories, how they achieved their current positions and their daily responsibilities as active STEM professionals. The event was kicked-off by an address from Professor Jeanette Altarriba, Dean of the College of Arts and Sciences at UAlbany.



STRANDED IN SCIENCE

A Career Panel for Exploration of STEM Careers



RESEARCH LEADERSHIP

Dr. Thenkurussi Kesavadas
VP Research and Economic Development
University at Albany, SUNY



SCIENCE COMMUNICATION

Dr. Sangeetha Selvam
Science Communication Specialist
The RNA Institute



INDUSTRY/CLINICAL MANAGEMENT

Ms. Lalita Kota
Clinical Operations Manager
Verily (Google Life Sciences)



INDUSTRY/RESEARCH

Dr. Marissa Louis
Analytical Scientist
Regeneron Pharmaceuticals



ACADEMIA/RESEARCH

Dr. Jillian Ramos
Postdoctoral Associate
University of Colorado, Anschutz



ACADEMIA/TEACHING

Dr. Stephen Deyrup
Associate Professor
Siena College

Host: Arun Richard Chandrasekaran

During the course of the hour long session, panelists shared their personal experience in the STEM field. Dr. Louis, an alumna of UAlbany and a former RNA fellow, shared that her internship at Regeneron Pharmaceuticals during her PhD aided her in landing her current job at Regeneron. Dr. Ramos added that having a postdoctoral experience is still a bonus to get into industry research positions, especially in the research and development (R&D) sectors. Having worked in multiple start-up companies, Ms. Kota explained that, in contrast to big companies, working at a start-up provides exposure to multiple aspects of a company and one-on-one interactions with people from different professions. Dr. Deyrup discussed the differences in academic tenure track positions in research intensive universities versus primarily undergraduate institutions. On being asked how to work beyond your expertise in communication, Dr. Selvam said her broad research experience helps her communicate different topics but stressed the importance of discussing new research with investigators before finalizing a story. More broadly, Dr. Kesavadas told the audience it was important to keep your focus on what you do in every stage of your career and do it well to achieve success.

The event was attended by over 60 guests including high school, undergraduate and graduate students, postdoctoral fellows and faculties. Reaction to the panel discussion were very positive.

"In addition to learning about the focus on teaching at PUIs from Dr. Deyrup, learning about the possibility of gaining teaching experience through visiting assistant professor positions and the availability of internal funding for research at PUIs was extremely helpful" - Nimmy John (Biology grad student)

Joe Ellis (grad student) commented that Ms. Kota's discussion on navigating the startup environment and on how to gain experience in another department at a start-up was particularly useful. Haley MacNeil, a first-year graduate student shared,

"I didn't realize that there are professions like science communicators, editorial careers, opportunities in start-ups after graduate school and possible internship opportunities in industries until listening to this panel".

A similar sentiment was echoed by Mónica Ventura (chemistry grad student) who said,

"It was great to hear about a broad range of careers, from talking about the inner workings of academia to how beginning at a small startup company can have many advantages."

All the panelists noted that it took hard work to reach their positions as well as the importance of developing a network of supportive colleagues. This event was supported by The RNA Institute and an NIH T32 training grant (5T32GM13206).

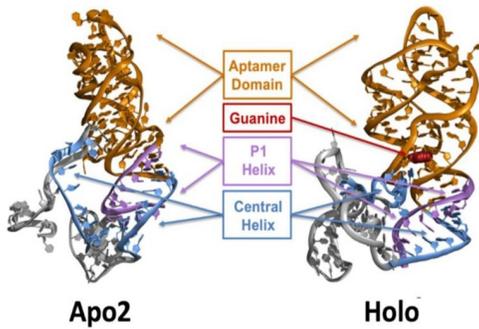


Attendees at the Stranded in Science Panel Discussion in the D'Ambra Auditorium, University at Albany, June 14, 2022.

Research Highlights

On and Off States of Riboswitch—NAR Breakthrough Article

Hybrid Model Starting Structures



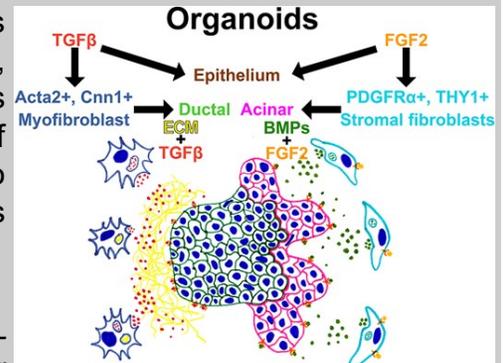
The Chen lab published a study with the Lucks Lab at Northwestern University on a bacterial riboswitch *Bacillus subtilis* yxjA guanine riboswitch, that changes its conformation under the influence of the surrounding metabolite. Their observed dynamics between the apo and holo states of the riboswitch used 2D replica exchange molecular dynamics simulations, in which they simulated multiple copies of the apo and holo state models at various temperatures with weak harmonic bias restraint strengths applied to base pairs observed from the Lucks Lab's cotranscriptional SHAPE-Seq studies.

“These are the first all-atom MD simulations to show the folding pathway of a purine riboswitch. They provide an elegant, mechanistic explanation for the cotranscriptional SHAPE-Seq data, and show us in molecular detail how bacteria regulate gene expression.” - Elise White, Undergraduate Researcher (Chen Lab)

Cheng, L., White, E. N., Brandt, N. L., Yu, A. M., Chen, A. A., Lucks, J. B. Cotranscriptional RNA strand exchange underlies the gene regulation mechanism in a purine-sensing transcriptional riboswitch, *Nucleic Acids Res.*, 2022, gkac102. [<https://doi.org/10.1093/nar/gkac102>]

Regeneration and Repair of Tissue Damage - Larsen Lab

The Larsen Lab focuses on the formation of embryonic salivary glands and the regeneration of tissues after injury. Former graduate student, Nick Moskwa, used single cell RNA sequencing analysis in organoids to deduce stromal cell subpopulations that support differentiation of epithelial cells. The lab also worked with collaborators at SUNY Poly to develop scaffolds to support the homeostatic phenotype of stromal cells for applications in regenerative therapies.

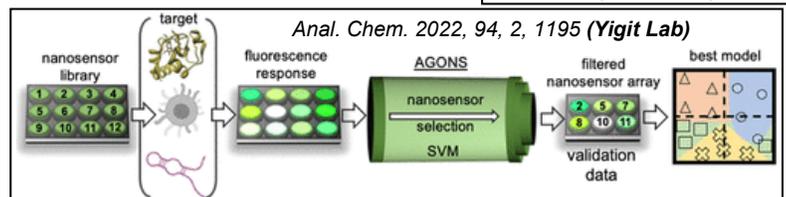
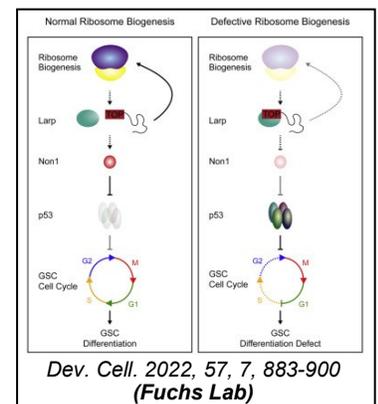
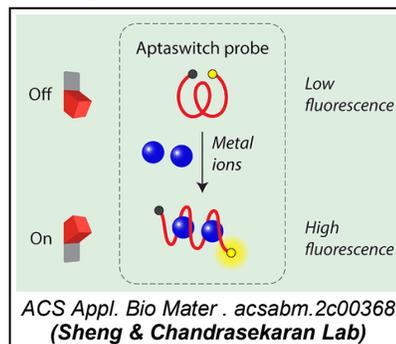
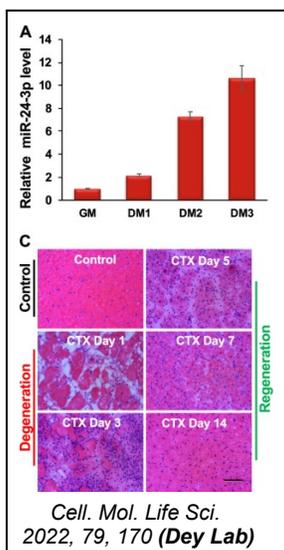


Check out some of their recent works below:

Moskwa, N., Mahmood, A., Nelson, D. A., Altreith, A. L., Forni, P., Larsen, M. Single-cell sequencing reveals PDGFRα+ stromal cell subpopulations that promote proacinar differentiation in embryonic salivary gland organoids. *Development Dev.* 2022, 200167. [<https://doi.org/10.1242/dev.200167>]

Ramesh P, Moskwa N, Hanchon Z, Koplak A, Nelson DA, Mills KL, Castracane J, Larsen M, Sharfstein ST, Xie Y. Engineering cryoelectrospun elastin-alginate scaffolds to serve as stromal extracellular matrices. *Biofabrication.* 2022, 14(3). [[doi: 10.1088/1758-5090/ac6b34](https://doi.org/10.1088/1758-5090/ac6b34)] PMID: 35481854.

Images from other exciting Institute research



Faculty and Staff Highlights

RNA Institute Director Andy Berglund Receives the 2022 Collins Citizen Award



Dr. Andy Berglund pictured at the Alumni Association Excellence Awards ceremony on April 30, 2022.

RNA Institute Director **Andy Berglund** was named the 2022 Collins Citizen of the University, awarded by the University at Albany Alumni Association. The Collins Citizen award recognizes outstanding contributions of leadership and service to the University by a non-alumni. Professor Berglund was nominated for his effort in leading UAlbany's COVID-19 surveillance program, which has been crucial in keeping our community safe. At the event, in addition to speaking about his work on COVID-19, Dr. Berglund spoke of his passion for research into myotonic dystrophy and his efforts to develop a Center for Excellence for repeat expansion disorders. In his nomination package for the Collins award, Don MacKenzie (Executive Director- The Marigold Foundation), said that Andy "... has a vision that the world can be greater than what it is and will do what he can to make it so".

Dr. Sweta Vangaveti Receives a SAGES Grant

Dr. **Sweta Vangaveti**, Research Scientist at the RNA Institute, was recently awarded one of three seed funding grants for collaborative projects by Project SAGES (Striving to Achieve Gender Equity in STEM). SAGES is a three year one million dollar ADVANCE grant from the National Science Foundation that provides funding to recruit and retain women and women of color in the STEM fields. Dr. Vangaveti's SAGES-funded project focuses on the her molecular modeling collaborative work with the RNA Institute's newest researcher, Dr. Chandrasekaran. This work is focused on engineering new drug delivery systems using DNA Nanostructures.



President Rodriguez and Provost Kim are pictured with the award winners in the Life Sciences Courtyard on April 11, 2022.

Junior Faculty Recognition Award Ceremony



VPRED Dr. Thenkurussi Kesavadas present the Junior Faculty Recognition Awards.

Two RNA Institute and Biology faculty were recently recognized by the University for winning prestigious federal grants. Drs. **Cheryl Andam** (NSF Career) and **Morgan Sammons** (NIH MIRA) were joined by RNA Institute Associate Director Tom Begley and Vice President of Research and Economic Development Thenkurussi Kesavadas at the Junior Faculty Recognition Award ceremony on April 23, 2022. Colleagues Dr. Qiang Zhang (Chemistry) and Drs. Aweek Dutta, Sherry Sahebi and Amirreza Masoumzadeh (Engineering) were also recognized for winning NIH MIRA and NSF Career grants.

Other noteworthy faculty and staff highlights

- Dr. **Cheryl Andam** received the **2021-2022 Ralph E. Powe Junior Faculty Enhancement Award**. Check out the [news article on the award here!](#)
- **Tammy Reid** received the **RNA Institute's Exceptional Service Award** for her leading efforts in running the COVID surveillance testing lab. [See the news article on the award here.](#)

Trainee Highlights — Graduate Students

Pheonah Badu, a graduate student from the Pager lab, was awarded a two year American Heart Association Predoctoral Fellowship (1/1/2022 - 12/31/2023) for her doctoral project “Transcriptional *regulation of antiviral regulation of antiviral response during Zika virus infection*”. Her research focuses on elucidating the upstream pathways responsible for ATF3 activation in Zika virus infected cells using molecular and cell biology approaches. Dr. Pager says

“She is an outstanding student, and her research is foundational to understanding how the cell controls the transcriptional response to stress such as during Zika virus infection.”



Jesus Frias and Pheonah Badu

Jesus Frias, a graduate student from the Berglund lab, was awarded a two year research fellowship from the Myotonic Dystrophy Foundation (3/1/2022 – 2/28/2024). Jesus is evaluating the activity of novel therapeutic compounds in cell lines from patients with myotonic dystrophy. Promising compounds will be tested in myotonic dystrophy mouse models to further validate their therapeutic potential.

Amber Altreith, a graduate student from the Larsen lab, was awarded a [SUNY GREAT](#) award recognizing her excellence in obtaining a competitive NIH F31 individual predoctoral fellowship, which provides funding to support her project to identify endothelial cell produced factors that may aid in salivary gland regeneration.

Afroz Golestanian, a graduate Student from the Begley lab, received the Lawrence and Marie Shore Graduate Scholarship in the Life Sciences this Year 2021-22 from the University at Albany.

Lamyaa M. Almeahadi, a PhD student from the Lednev lab, received a national Coblentz Student Award.

Anwasha Sarkar, a recent PhD graduate from the Begley Lab, was awarded the Peter and Anne Marfey Book Award from the Department of Biological Sciences at UAlbany. The award recognizes her excellent work that includes and reaches beyond the field of biochemistry.

Trainee Highlights — Undergraduate Researchers



Claudia Lennon

Claudia Lennon (Berglund Lab) was named the 2022 Recipient of the Chemistry Faculty Award for the 2021-2022 academic year by the Department of Chemistry, University at Albany. Ms. Lennon recently graduated from UAlbany and is currently working in the Berglund Lab as a research support specialist in the field of Bioinformatics. Claudia has been working hard this summer supporting the [Undergraduate Summer Bioinformatics Fellowship Program](#).

Many RNA Institute Undergraduate Researchers won accolades at the 2022 Biology Undergraduate Research Symposium including:

Kevin Thomas (Halvorsen Lab) won the Glenn L. Bumpus Award in 2022 Biology Undergraduate Research Symposium for his research talk.

Oral Presentation Winners: **Carrson Widen** (Begley Lab), **Kavipriya Kovai Palanivel** (Herschkowitz Lab) and **Kate Sazon** (Sammons Lab).

Poster Presentation Winners: **Nathan Forrest** (Halvorsen Lab) and **Sevinj Mursalova** (Berglund Lab).

Recent UAlbany graduates **Ché-Doni Platt** and **Sevinj Mursalova** joined the Institute as members of the COVID-19 surveillance testing lab this summer. Welcome aboard **Ché-Doni** and **Sevinj!**



Recent UAlbany grad who worked in the Halvorsen lab and current COVID team member **Ché-Doni Platt** was the Student Speaker at the 2022 UAlbany Commencement.

Lab Spotlight — Fuchs Lab

Research in the Fuchs Lab [Twitter: @fuchs_lab]

The Fuchs Lab studies the regulation of protein biosynthesis with an emphasis on non-canonical translation mediated by an internal ribosomal entry site (IRES). Another research question the Fuchs lab addresses is the role of post-translational ribosomal protein modifications, such as lysine acetylation, and how they alter translation of specific mRNAs. Using cellular and molecular biology techniques, the Fuchs lab aims to decrypt the ribosome code in eukaryotic systems.

- Mechanism of translation initiation in mammalian cells
- IRES-mediated and other non-canonical translation initiation events
- Role of 5' UTR RNA secondary structures in translation
- Ribosome composition in cells during stress and viral infections



Current Fuchs Lab Members (L to R):

Stephanie Fisher (Research Technician), Sydney Hanson (Undergrad), Dr. Gaby Fuchs (PI), Shu Jun Lin (PhD candidate), Dr. Sangeetha Selvam (Post-doctoral Associate), Esperanza Rosas (PhD student), Haley MacNeil (PhD student), and Ed Norkvests (PhD student)

Recent publications:

- Martin, E. T., Blatt, P., Nguyen, E., Lahr, R., Selvam, S., Yoon, H. A. M., Pocchiari, T., Emtenani, S., Siekhaus, D. E., Berman, A., Fuchs, G., Rangan, P. A translation control module coordinates germline stem cell differentiation with ribosome biogenesis during *Drosophila* oogenesis, *Developmental Cell*, 2022, 57(7), 883-900.e10. [<https://doi.org/10.1016/j.devcel.2022.03.005>]
- Sehta, P., Wilhelm, A. M., Lin, S. J., Urman, M. A., MacNeil, H. A., Fuchs, G. A Split NanoLuc Reporter Quantitatively Measures Circular RNA IRES Translation. *Genes*. 2022, 13(2):357. [<https://doi.org/10.3390/genes13020357>]
- Freitas, F. C., Fuchs, G., de Oliveira, R. J., Whitford, P. C. The Dynamics of Subunit Rotation in a Eukaryotic Ribosome. *Biophysica*. 2021, 1(2):204-221. [<https://doi.org/10.3390/biophysica1020016>]
- Miller, C. M., Selvam, S., Fuchs, G. Fatal attraction: The roles of ribosomal proteins in the viral life cycle. *WIREs RNA*. 2021. 12(2), e1613. [<https://doi.org/10.1002/wrna.1613>]

The New 2022 Cohort of RNA Fellows

The Doctoral RNA Training Program is a novel, PhD-level training program for current University at Albany students and provides a multi-disciplinary curriculum with a focus on RNA and its health relevance. Participating students are selected from PhD programs within the UAlbany departments of Biological Sciences, Biomedical Sciences, Chemistry, and SUNY Polytechnic Nanobiosciences.

Funded in part by a T32 NIH training grant, led by Drs. Marlene Belfort and Tom Begley, the program supports a comprehensive, individualized, and intellectually rigorous PhD training experience.

[Click here for more information.](#)



2022-2023 Cohort of RNA fellows

Left to right: Charity McManaman, Rose Nozwari, Emmanuel E Adade, Jacob H Schroeder, Dylan Ehrbar, Sawyer Hicks, Rachel Lange, Shu Jun Lin, Michelle Urman, William Mudd, Ian M McClain, Joey R Tavarez.

The doctoral RNA training program is run by The RNA Institute, which is a proud member of the [UAlbany College of Arts and Sciences](#) (CAS). CAS also provides support to the RNA training program

8th Annual RNA Institute Symposium Highlights



The 8th Annual RNA Symposium was held on March 17th and 18th, 2022 as a hybrid meeting with both in-person (Day 1) and virtual (Day 2) presentations. This year over 280 attendees had the privilege to hear Professor Joan Steitz from Yale School of Medicine and Professor Erik Sontheimer from University of Massachusetts Medical School, (pictured on the left with Professor Marlene Belfort) deliver outstanding keynote addresses along with fantastic talks by RNA Institute faculties and in-person poster sessions on the first day. The second day featured virtual presentations by undergraduate, graduate and postdoctoral trainees.

Award Winners at the 8th Annual RNA Institute Symposium

Trainee Talk Award Winners:

Pheonah Badu (University at Albany, SUNY), Atagun Ulas Isiktas (Yale University), Rebecca D'Esposito (University at Albany, SUNY), Melissa Ait Said (Institut Cochin—Universite de Paris)

Undergraduate Talk Award Winners:

Suxuan Wang (Mount Holyoke College), Sergio Ocampo (National Polytechnic Institute, Mexico), Elise White (Rensselaer Polytechnic Institute - RPI)

Poster Award Winners:

Rachel Fay (University at Albany, SUNY), Emily Rice (West Virginia University), Chukwudi Humphrey Omeoga (University at Albany, SUNY), Raghu Ram Katreddi (University at Albany, SUNY), Aaron Premo (University at Albany, SUNY), Madera Kachwala (University at Albany, SUNY), Kevin Thomas (University at Albany, SUNY), Kavipriya Palanivel (University at Albany, SUNY), Grace Crowe (SUNY Brockport)

Faculty and Staff Awards:

Excellence in Mentoring: Alexander T. Ciota, Assistant Professor, Department of Biomedical Sciences and the RNA Institute

Excellence in Mentoring: Cara Pager, Associate Professor, Department of Biological Sciences and the RNA Institute

Excellence in Research: Cheryl P. Andam, Assistant Professor, Department of Biological Sciences and the RNA Institute

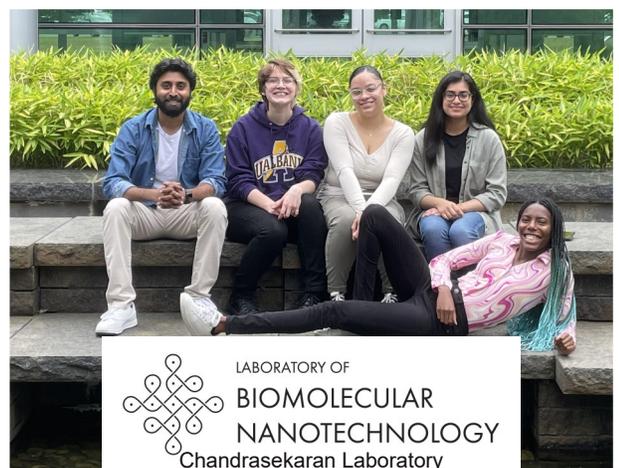
Excellence in Research: Maksim Royzen, Associate Professor, Department of Chemistry and the RNA Institute

Excellence in Service: John Cleary, Collaborative Staff Scientist, The RNA Institute

Excellence in Service: Paul Gumpfer, Administrative Manager, The RNA Institute

A new research group at The RNA Institute

Arun Richard Chandrasekaran, a well-known member of The RNA Institute, has taken on a new role in the Institute as a Senior Research Scientist with his own independent research laboratory (arunrichard.com). His lab's research is based on DNA nanotechnology (building nanoscale structures using DNA) with a focus on functionalizing DNA nanostructures for applications in drug delivery, biomolecular computation and the creation of structural scaffolds for X-ray crystallography. He was recently awarded a 2-year R03 grant for \$312,000 from the NIH National Institute on Aging (NIA) for his project entitled "DNA nanostructures as siRNA delivery vehicles for Alzheimer's therapy". We welcome Arun and his team!!!



Capital District Postdoc Association (CDPA)



Dinner at Druthers
March 2022

CD
PA



The [Capital District Postdoc Association](#) is a cross institutional community of postdoctoral researchers in the Capital Region of New York State. The CDPA includes members from UAlbany, Wadsworth Center, Albany Medical College, Neural Stem Cell Institute, SUNY Polytechnic Institute and Rensselaer Polytechnic Institute and serves the community of postdocs in the Capital Region by tailoring their events and opportunities to the needs of their members.

**Maximizing LinkedIn
to Reach Your Career Goals**

A CDPA-SPONSORED WORKSHOP
HOSTED BY DR. NISHA CAVANAUGH
AND HEATHER DILLON

WEDNESDAY, JULY 20TH
6:00PM

Details and Zoom link on CDPA Slack Page
Contact us at capitaldistrictpostdocs@gmail.com
for access.

Icecream Social
June 2022



The CDPA will also be hosting their 2nd Annual Research Symposium on September 23rd during postdoc appreciation week, save the date. Finally, the CDPA would like to congratulate and say farewell to Dr. Teddy Garcia Aroca who will be moving on from his postdoctoral position in the Andam lab at UAlbany to an independent position as an Assistant Professor at the University of Nebraska, Lincoln. Congratulations Teddy!

Message from the Director

Summer is an exciting time at the RNA Institute! We welcomed an amazing group of 91 trainees to our Institute [Summer Fellowship Program](#). These talented individuals are contributing to the mission of the Institute through in person research and our virtual bioinformatics program. Summer trainees are spread across twenty different Institute labs and hail from seven different countries. The program is dependent on the hard work of Hannah Shorrock, Emily Davey, Claudia Lennon, Paul Gumper, Tammy Reid and the group leaders and mentors. Together this team works to ensure our trainees have the skills to be successful and providing this cohort with the foundation to continue in research and careers in STEM.

In 2022, many of our trainees and faculties (see page 5) won new federal and foundation awards (Badu, Frias, Andam, Begley, Belfort, Berglund, Chandrasekaran, Chen, Cleary, Dey, Halvorsen, Larsen, Lednev, Musah, Niu, Reddy, Royzen, Sheng, Valm, Vangaveti). This success highlights our faculty's continued excellence in advancing their research programs. To maintain our cutting-edge equipment, Drs Valm, Larsen and Cleary led the successful effort to land a NIH S10 equipment grant for a new Zeiss 980 confocal microscope. We also will shortly receive federal earmark funds for the purchase of a mass spectrometer, an isothermal titration calorimeter and enhancements for the new confocal microscope.

Moving forward, I would like to invite you to join us at one or more of our upcoming events. On August 9th we will have an afternoon retreat with an invited speaker (Dr. Natoya Peart, UPenn) and a poster session that will provide an opportunity for our trainees to present their research. We have several exciting RNA café professional development events and Stranded in Science seminars this fall. The Hudson Valley RNA club will also begin in September and is always a great way to connect with colleagues. We have two renowned Scientists, Drs. Melissa Moore (Moderna) and Robert Langer (MIT) giving seminars on September 15th in the Life at the Interface of Science + Engineering lecture series. Last but not least on March 16-17, 2023 we will hold our 9th Annual RNA Institute Symposium!

Life Sciences Research Building 2033,
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Thanks for being
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