



THE RNA INSTITUTE

COLLEGE OF ARTS & SCIENCES UNIVERSITY AT ALBANY

The background features a complex, abstract representation of nucleic acid structures. It includes several double helix-like forms in various colors (cyan, magenta, orange, red, blue) and a dense, cloud-like mass of overlapping translucent shapes in shades of purple, pink, and blue. The overall effect is a vibrant, scientific visualization of molecular complexity.

2019-2020 Annual Report

THE RNA INSTITUTE

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About our logo: The RNA Institute Rosette draws its influence from the helical shapes created by DNA and RNA structures when viewed from above. The rosette's six hexagonal connected loops create a unified form that spirals towards a central location. The interlocked nature of the rosette mirrors the strong collaborative approach of the Institute where researchers working together toward new discoveries and solutions. Its unique structure holds a concentrated hexagonal point in its center suggesting a focus on results, while at the same time radiates and blooms outward representing a collaborative environment.

Cover Image: Part of RNA Institute's original logo depicting RNA Polymerase II. Based upon computational rendering from the structure originally solved by Roger Kornberg. RNA polymerase II is the enzyme responsible for catalyzing the transcription of DNA into messenger RNA, which in turn dictates the order of the amino acids building blocks that make-up the final proteins. For his work on the mechanisms of mammalian transcription, Kornberg received the Nobel Prize in Chemistry in 2006.

Original image credit: David Bushnell, Ken Westover and Roger Kornberg, Stanford University



A few words from our Director

J. Andrew Berglund, PhD



It has been so exciting and wonderful to serve as the Director of the RNA Institute during this past year and watch our faculty rise to the challenges of these turbulent times. This past year marked a number of significant accomplishments by our faculty, staff and trainees, which are highlighted in this annual report. First and foremost, I am extremely pleased by the caliber of the research our faculty are conducting as we make strides to better understand and utilize RNA across many diverse academic fields. The close collaborative effort between faculty and trainees is one of the reasons that originally drew me to this great institution, and it continues to be one of our key strengths that I plan to sustain and support in the years to come.

Our combined struggles during the recent COVID-19 pandemic and the resulting monumental shift in research and effort, is an example of what our researchers can accomplish even during the most troubling times. The ability of our faculty, staff and trainees to pull together to support one another, continue our research and help train students remotely has truly been remarkable. Our summer undergraduate research program, one of the shining stars of the RNA Institute, was certainly not dulled by the social distancing restrictions as we have been able to offer a remote learning experience in bioinformatics that includes students from high school to post-doctoral fellows. In the future, I hope to grow this effort into a sustainable program that can help bring big data science to all the researchers at the RNA Institute.

During this past year, it was my great pleasure to host our first, but definitely not last, RNA Institute Summer Collaboration Retreat. The two-day event at the Carey Institute for Global Good allowed me to meet a number of people across more than 25 partner labs and 5 research institutions that participated. I learned a lot about everyone and their research and believe that a large number of collaborative projects were born during our retreat. Increasing communication and collaboration between our faculty is something that is a cornerstone of my directorship.

As I look forward to the next year, while some may see challenges and limitations to the research and funding environment, I choose to see opportunities for our faculty to grow and the potential to strengthen the RNA Institute by forming new and exciting collaborations. Given the diversity of RNA research and its ability to inform our understanding of not just biology and chemistry but also as a tool to delve into this process, I believe we are perched on the precipice of making exciting new discoveries. I hope you share my enthusiasm for RNA research and the RNA Institute and will join us to ***unleash greatness***.

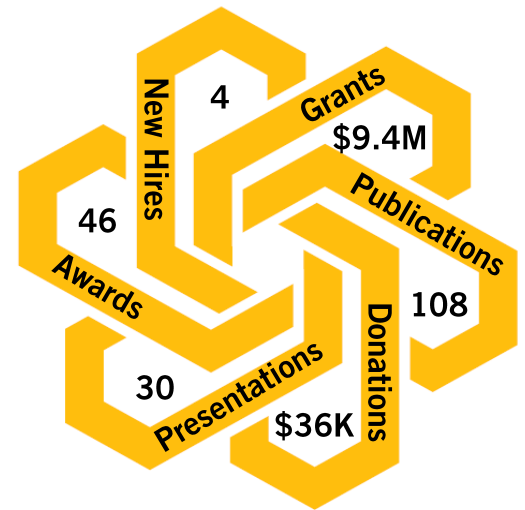


Executive Summary

During the fiscal year (July 1, 2019 – June 30, 2020), the RNA Institute implemented a series of initiatives designed to forward our mission of training the next generation of RNA researchers, while contributing to the University at Albany's strategic plan. Many of these initiatives required changes to adjust to COVID-19 disruptions, but the willingness of participants to be flexible and creative allowed goals to be met. Key initiatives are highlighted below and detailed throughout the report.

🌀 Research Excellence

- **Grants and Publications:** RNA Institute members received over \$9.4 million in grants & awards last year (*pg 22-25*) and published over 108 scientific papers (*pg 26-27*)
- **COVID-19:** Six RNA Institute-affiliated researchers have been awarded grants to work on the virus including novel testing strategies, genetics and transmission in New York State, and RNA modifications in SARS-CoV-2 biology (*pg 7*)
- **New York Center for Myotonic Dystrophy Research:** Utilizing a growing core of Institute researchers with over 4 decades of combined experience in the DM field, the RNA Institute is laying the foundations for New York Center for Myotonic Dystrophy Research. (*pg 8*)



🌀 Supporting Diversity and Inclusivity in STEM

- The RNA Institute Undergraduate Summer Fellowship promotes training of a diverse biomedical workforce and included 13 students that were under-represented minorities (URM).
- Although the 2020 RNA Institute Symposium was postponed due to COVID-19, travel fellowships for URM trainees to participate in the symposium will be carried over to the 2021 symposium.
- The RNA Fellows Program, supported by an NIH Training grant is supporting diversity at UAlbany. The 2020-2021 class includes 4 URM fellows out of a cohort of 16.
- In the RNA Institute we are using grants to support our efforts to diversify the trainees, with 2 members recently receiving NIH diversity supplements. We are also offering funds for faculty to take advantage of the NIH diversity supplements.

🌀 Enrollment and Retention

- The RNA Institute's Summer Fellowship program moved to a fully online research platform for the 2020 term due to COVID-19. 31 students were selected from UAlbany and 11 other colleges & high schools from around the country, serving as a powerful tool to recruit students to UAlbany.
- RNA Institute faculty and trainees visited over a half dozen institutions and presented to over 150 undergraduates, with a focus on recruiting underrepresented minorities (URM) to our graduate programs.

The RNA Institute

🌀 Our Members

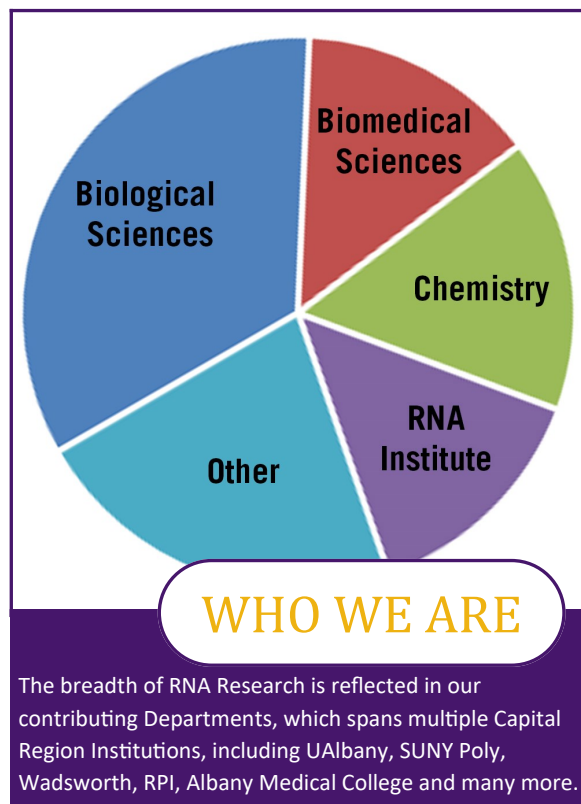
The RNA Institute is more than just a modern research facility, we are a collection of diverse and talented researchers united by a common goal in understanding the role of ribonucleic acid (RNA) across different fields, including biology, chemistry, biomedical sciences, physics, and nanobiosciences. RNA forms the basis of our research, it is the common element that we study, build, modify and analyze as well as the building blocks that we use to construct tools, reporters and therapies.

🌀 Our Vision

The RNA Institute is positioned to make significant contributions towards understanding the role of RNA in fundamental biological and chemical processes, developing RNA as a tool for science and harnessing the resulting knowledge to improve human health. The Institute brings together teams of researchers from Departments across the capital region (see inset) and beyond.

🌀 Our Mission

Our priority is to advance RNA research while training the next generation of RNA scientists, which includes our commitment to increasing the number of individuals from under-represented groups at the RNA Institute and in STEM. The driving force behind the RNA Institute is our active researchers who share the common goals of providing outstanding mentoring to our trainees and using the Institute's advanced technologies in order to make new discoveries centered around RNA. The long term goal of the Institute and our researchers is to translate our scientific discoveries and technological advancements into improving the human condition.



RNA Institute (2nd floor) in early spring

RNA Institute joins the battle against COVID-19

🌀 Researchers rapidly pivot to tackle pressing global COVID-19 pandemic

One of the RNA Institute's strength lies in the central role that RNA plays in a vast array of biological and chemical processes, including the single-stranded SARS-CoV-2 RNA coronavirus that is the cause of the global COVID-19 pandemic. With New York State at the very heart of the pandemic, our researchers were able to quickly pivot their research programs to tackle pressing issues related to SARS-CoV-2 biology, detection, transmission and treatment. In close collaboration with outside laboratories who handled the active virus, our researchers went to work in minimal essential teams in closed buildings working under strict health and safety conditions. The ability to rapidly pivot our research towards regional, federal and global issues of importance is one of the reasons the RNA Institute is a vital resource to the capital region and the State of New York.

🌀 Highlights of our ongoing COVID-19 research



Dr. Ken Halvorsen, an innovative researcher in the field of DNA nanotechnology, received a National Science Foundation RAPID Award for the development of a rapid SARS-CoV-2 Test. The lab is re-engineering their DNA nanoswitch assay to deliver COVID-19 test results within 1 hour without the need of a laboratory, an approach that has received a lot of attention and press coverage.



Dr. Andrew Berglund is collaborating with SUNY Upstate Medical University to investigate clusters of COVID-19 patients in Upstate New York by sequencing RNA from patients, their microbiome and the SARS-CoV-2 virus. This information will help to understand the genetics and transmission of the virus as well as an invaluable long-term resource for SUNY scientists and global research teams.



Dr. Cara Pager is collaborating with Dr. Berglund on the later stages of the Upstate COVID-19 investigation by examining the role of RNA modifications in SARS-CoV-2 biology. Dr. Pager specializes in understanding how RNA viruses subvert cellular RNA metabolism pathways and is interested in how epitranscriptomic marks modulate viral gene expression. Her work may provide additional clues to how this virus and others, impact patient health and influence patterns of transmission.



Dr. Alex Valm, a human microbiome expert, received UAlbany SEED funding for his project "*Novel Technology for Mapping the Spatial Structure of the COVID-19 Salivary Microbiome*". By comparing saliva from healthy and COVID-19 patients his research team hopes to understand how mouth microbial communities function to prevent infection.



Dr. Scott Tenenbaum, a leading expert on nanoscale science, was awarded funding by SUNY to fabricate COVID-19 diagnostic test based on his innovative structurally interacting RNA (sxRNA). The project, which partners with Ciencia Inc and the Wadsworth Center, is aimed at detecting not only the infection but also patient immune response and disease status.

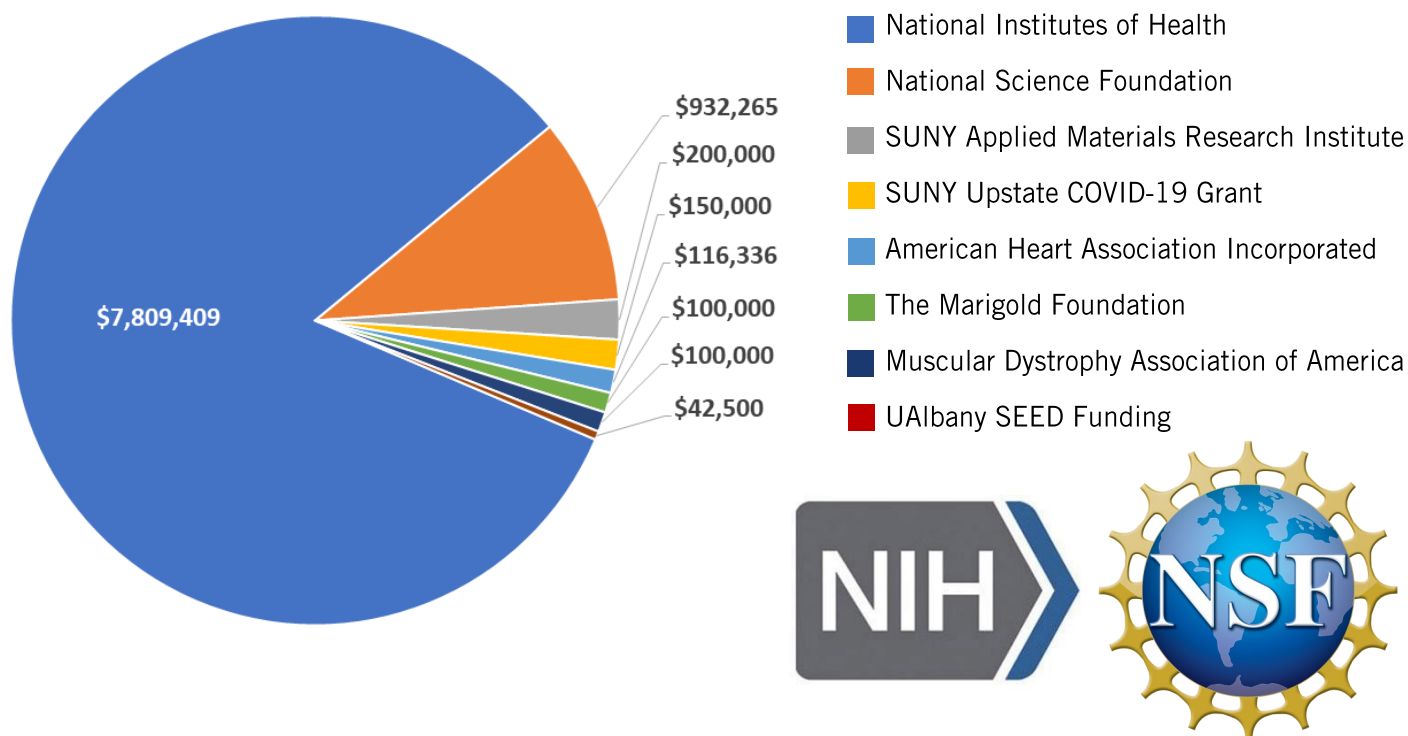


Dr. Mehmet Yigit, an expert in chemical bionanotechnology, received UAlbany SEED funding for his project "*Visual Rapid Tests of COVID-19 Biomarkers for On-Site Diagnostics*". This project seeks to create an ultrasensitive, cost-efficient and programmable detection based on the Yigit's teams nanoparticle technology.

RNA Institute Grant Overview

The RNA Institute and affiliated researchers have been awarded a total of \$9.4M this fiscal year.

Institute Faculty Funding Sources



Highlighted faculty grants from 2019/2020

<p>COLLEGE OF ARTS AND SCIENCES UNIVERSITY AT ALBANY State University of New York</p> <p>Dr. Gabriele Fuchs, Ph.D. Assistant Professor Department of Biological Sciences</p> <p>Dr. Fuchs received funding from the National Institute of Allergy and Infectious Diseases for her award titled "<i>Lysine Acetylation Ribosomal Proteins During Poliovirus Infection Limits Viral Translation</i>"</p>		<p>COLLEGE OF ARTS AND SCIENCES UNIVERSITY AT ALBANY State University of New York</p> <p>Dr. Alan Chen, Ph.D. Associate Professor Department of Chemistry</p> <p>Dr. Chen received funding from the National Science Foundation for his award titled "<i>Collaborative Research: Uncovering How Riboswitches Exploit Out-of-Equilibrium RNA Folding Pathways to Make Genetic Decisions</i>"</p>	
<p>SUNY POLYTECHNIC INSTITUTE</p> <p>Dr. Scott Tenenbaum, Ph.D. Associate Professor College of Nanoscale Science and Engineering</p> <p>Dr. Tenenbaum received funding from SUNY Applied Materials Research Institute for his award titled "<i>The RNA SAMRI – A collaborative venture between the RNA Institute and Applied Materials</i>"</p>		<p>SCHOOL OF PUBLIC HEALTH UNIVERSITY AT ALBANY State University of New York</p> <p>Dr. Janice Pata, Ph.D. Department Chair Biomedical Sciences</p> <p>Dr. Pata received funding from the National Institute of Health for her award titled "<i>Mechanisms of Bacterial DNA Polymerase Replication and Fidelity</i>"</p>	

Collaborative Partnerships

✿ Building the foundation for a New York Center for Myotonic Dystrophy Research

The most common cause of adult muscular dystrophy, myotonic dystrophy (DM), has a surprising high prevalence in New York State (~1 in 2,100). Luckily New York State also has a number of leading DM researchers, including our Institute Director, **Dr. Andrew Berglund**. Utilizing a growing core of Institute researchers with over 4 decades of combined experience in the DM field, the team is laying the foundations for the New York Center for Myotonic Dystrophy Research. While still in the planning and development stages, the Center's goal will be to serve as an internationally recognized research and training hub for scientific discovery, clinical advancement, community engagement and therapeutic development in DM. The Institute already holds several major federal and private grants supporting DM research and strong philanthropic support for DM research.

✿ Collaboration with Applied Materials

Institute researchers, Drs. Berglund, Cleary, Larsen and Tenenbaum, have recently entered into an agreement with the SUNY Applied Materials Research Institute (SAMRI) to help forge the next generation of scientific instrumentation. The team will work closely with Applied Materials scientists to analyze a variety of RNA-based projects using cutting-edge instrumentation developed at Applied Materials. This collaboration gives the RNA Institute advanced access to instruments ahead of the general market while Applied Materials gets support in developing academic-focused workflow, sample preparation and back-end analytics. This project is a true win-win and a great example of the ongoing strategic public-private partnership at the RNA Institute.

✿ RNA Collaborative Seminar Series (rna.albany.edu/rna-collaborative/)

RNA research is a strong and vibrant field and our Institute has many sister Centers throughout the world with shared passions for RNA and its application to science, technology, health and education. To facilitate scientific collaboration and cooperation and develop shared funding and recruitment strategies, RNA Institute staff (Paul Gumper, Liisa Koski & Tammy Reid) have joined staff from these other Centers to hold joint online strategy meetings. A new RNA collaborative seminar series was born out of these meetings with the goal of cross promoting RNA research while strengthening and connecting the RNA scientific community.



Training the next Generation of RNA Researchers

RNA Fellows Program

Our novel graduate training program, **RNA in Health and Disease**, received additional support from an NIH T32 Instructional grant. The program provides a multi-disciplinary curriculum with a focus on RNA and its health-related benefits. We aim to develop our future science leaders by providing graduate students with comprehensive access to faculty, techniques and collaborations within UAlbany, SUNY Polytechnic Institute and the RNA Institute.

During this program, students develop a basic understanding of RNA science and the ability to transform knowledge into technical applications. Students can select additional training in practical experiences in business entrepreneurship and/or communication. The latter training involves writing excellence and entrepreneurship through programs with the New York State Writers Institute and the UAlbany Innovation Center. This approach ensures a broad educational



The 2019-2020 cohort of RNA Fellows

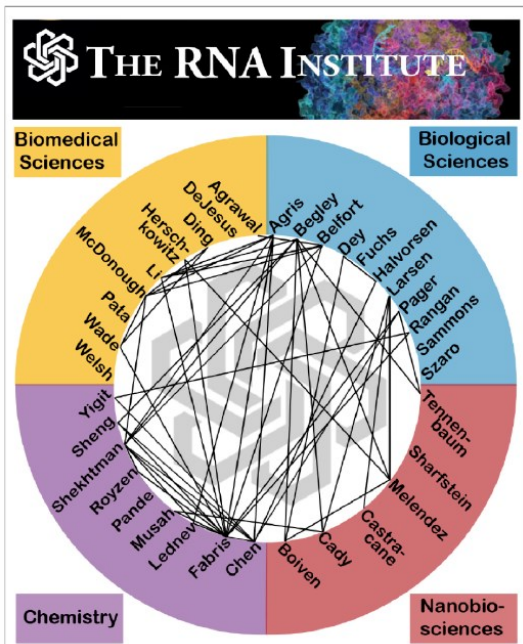
Front row (L to R): May Yue Lee (Melendez/Begley), Zhixue Bai (Chen), Anwesha Sarkar (Begley), Kahini Sarkar (Rangan)

Back row (L to R): Tristen Head (Cady), Priyanka Sehta (Fuchs), Nicole Ralbovsky (Lednev), Rachel Fay (Ciota), Jesus Frias (Berglund)

Not Present: Pheonah Badu (Pager), Ya Ying Zheng (Sheng), Ali Ropri (Herschkowitz)

experience that prepares our students for a wide range of career options.

The new \$1.1 million grant from the National Institute of General Medical Sciences enlarges the yearly cohort of RNA Fellows by six additional students for each of the next four years. The award also expands the program's scope to include students from the departments of Biological Sciences, Biomedical Sciences, Chemistry and Nanobiosciences. This year we awarded twelve fellowships, which brings the total number of RNA Fellows trained to 34. There is a strong network of interconnected faculty (*see left image*) that are excited to mentor these students towards careers in RNA-based academic and industrial industries.



Highlighting success in our RNA Fellows Program

✿ Nicole Ralbovsky—Prize winning RNA Fellow

We are happy to announce that Nicole Ralbovsky, a fourth year Chemistry graduate student from the Lednev Lab and RNA Fellows was recently honored with two prestigious awards: The 2020 NY/NJ Society for Applied Spectroscopy's Graduate Student Award and the Eastern Analytical Symposium Graduate Student Research Award.

"I am so grateful that these awards have recognized the effort that I have put in and I am very honored to have received them. The ability to share my research efforts with those in the same field has opened up many doors for future collaboration and networking opportunities that I am immensely thankful for," said Nicole.

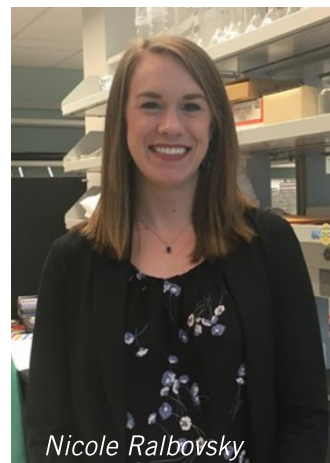
Nicole presented her research remotely at the May 2020 NY/NJ Society for Applied Spectroscopy meeting where she described her project which focuses on using an analytical chemistry technique called Surface Enhanced Raman spectroscopy for achieving single-molecule detection of DNA and RNA. The method is very sensitive and able to detect minute amounts of an analyte present in a sample. After showing single-molecule detection is possible, the next step is to investigate the method for detecting specific sequences of DNA or RNA which are biomarkers for a disease of indicative of a condition of interest. The goal of this approach is to capitalize on the sensitivity of Enhanced Raman Spectroscopy to achieve better and more accurate diagnoses.

"I have enjoyed a lot of different things about the RNA Fellows Program," said Nicole. *"First, I loved the RNA retreat, it was a great opportunity to jump in and meet new people while learning about the different research everyone is conducting. I also have greatly enjoyed learning from the professors, they are all such abundant sources of knowledge and information and it has been really great to learn from people with so much experience in this field."*

Nicole plans to defend her Ph.D. this fall and has accepted a position with Merck. She is excited to apply the skills and knowledge she has gained as a graduate student at the University at Albany toward a useful and productive career in pharmaceutical sciences.

"I am incredibly thankful to the RNA Fellows program for taking me in and showing me the exciting world of RNA biology," said Nicole. *"There are many new things that I have learned which I never would have if not accepted into this program. The experience has been amazing, and I will be forever grateful to have had the opportunity to be involved in it".*

Nicole and the Lednev group are great examples of the excellent trainees and faculty found at the RNA Institute. We are tremendously proud of the group's achievements.



Nicole Ralbovsky



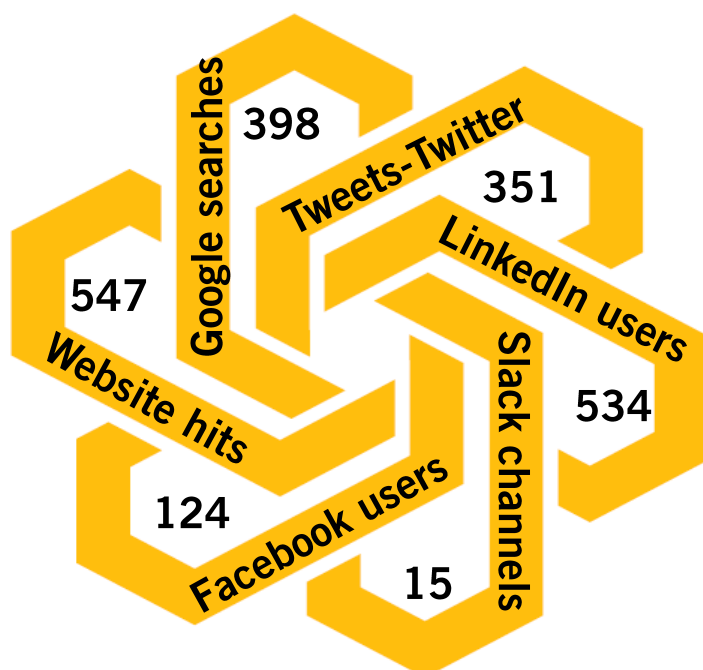
Lednev research group



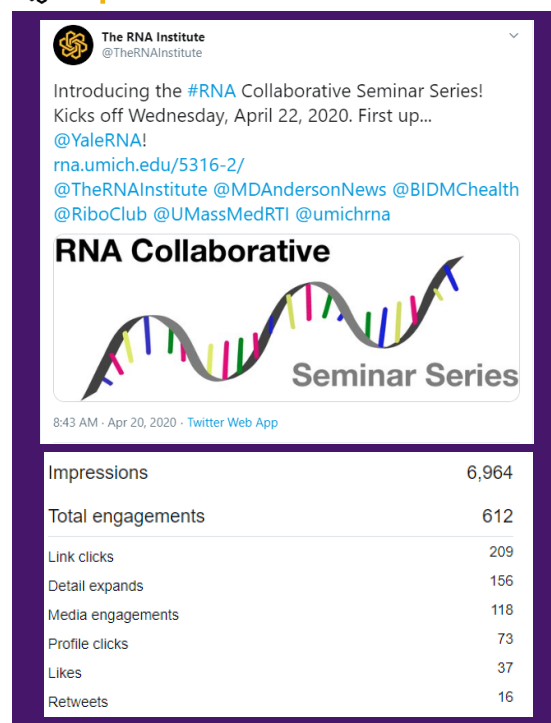
Dr. Lednev

Institute Social Media Outreach

Social Media Followers

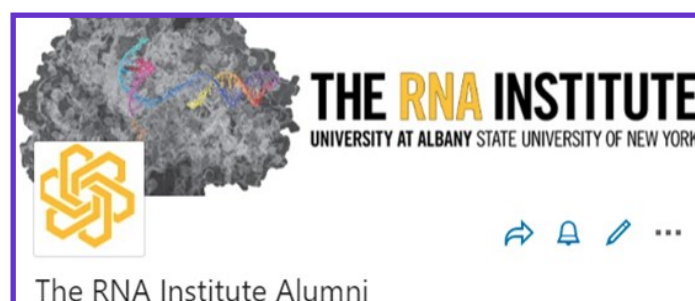


Top Tweets



RNA Institute Alumni

We recently launched a LinkedIn Group for [RNA Institute Alumni](#) to keep connected to student, faculty and staff alumni. These connections provide vital feedback on the current job market and a peer network for future graduates. Institute student alumni that have graduated this year include:



Allison Catizone (Sammons) - Senior technical account manager at Genscript
 Eren Dong (Belfort) - Postdoc at UMass Medical School
 Cathleen Green (Belfort) - Scientist at Regeneron Pharmaceuticals
 Matthew Koslow (Larsen) - Postdoc at Mayo Clinic (MN)
 Christopher Lennon (Belfort) – Assistant Professor at Murray State University (KY)
 Andrea Leonardi (Begley) - Scientific Program Manager at Taconic Biosciences
 Clare Miller (Fuchs) - Postdoc at Mount Sinai (NY)
 Alicia McCarthy (Rangan) – Scientist at 10x Genomics
 Kevin O’Keefe (Larsen)– Laser scanning light microscopy product application sales specialist at Zeiss
 Ankana Naik (Forni) - Postdoc at UAlbany
 Olga Novikova (Belfort) - Assistant Professor at Buffalo State
 Nicole Ralbovsky (Lednev) – Scientist at Merck
 Miles Sawyer (Dey) - Medical school
 Dan Woods (Belfort Lab) – Postdoc at Wadsworth

RNA Institute Summer Fellowship Program

This year the RNA Institute's Undergraduate Summer Fellowship looked a little different. Traditionally, students from the capital region and beyond flocked to the Institute's advanced labs to conduct hands-on research side by side with some of the region's top researchers. The COVID-19 pandemic has restricted this educational opportunity. Rather than cancel the program, the Institute's staff and faculty, under the direction of Dr. Andy Berglund, jumped in to embrace the new normal of social distancing by going completely virtual. Thirty students from across the country (California, Colorado, Florida, New Mexico and New York) took part in this 10-week summer program by working keyboard to keyboard with RNA Institute researchers.

The summer program was adapted to remotely teach Bioinformatics, a growing component of modern research in which large digital biological research data (entire genome sequences) are analyzed computationally. Researchers are increasingly expected to have the bioinformatics skills necessary to effectively process, manage and utilize complex sets of data.

Not content to simply teach the students these skills, the Institute program taught by bioinformatics specialist, Ryan Meng, fought back by teaching students to analyze the COVID-19 genome itself. After learning the basics of remote data processing, the undergraduate fellows put their new knowledge towards analyzing data from an ongoing COVID-19 RNA Institute – Upstate collaboration (<https://www.rna.albany.edu/cluster-investigation-of-covid-19/>). The students and researchers looked for clues in the virus's genes that may explain how the virus is transmitted and if the virus in Upstate New York is similar to viruses elsewhere in New York and around the world. Together this student cohort helped push forward our understanding of the virus in Upstate NY.

Pulling together limited resources and critical support from philanthropic donors, the program was able to expand to include several students whose summer research programs had been cancelled. The program also pulled in UAlbany graduate students and postdoctoral fellows who had been unable to work at the bench due to COVID-19 restrictions.

"I am very excited to work on COVID-19 research. My summer likely would have looked very different had the pandemic not happened, but without it, I likely wouldn't have been able to get my EMT while doing this exciting research, all while spending more time with my family and dog.

Maybe not the summer I expected, but certainly memorable and full of learning and exploration" – said Katie O'Neill-Knasick, a Biochemistry student entering her second year at Rochester Institute of Technology.

More details about the Summer Program can be viewed on the below webpage:

<https://www.rna.albany.edu/rna-institute-undergraduate-summer-fellows-program/>



Expanding the laboratory into the digital world:

Screenshot of Summer Fellowship Bioinformatics course in action

Hudson Valley RNA Club

The [Hudson Valley RNA Club](#) (HVRC) is an RNA Salon supported by the [RNA Society](#). HVRC seeks to create a community and a scientific forum for students, postdocs, and scientists engaged in RNA-related research in the Hudson Valley region and beyond. The club is intended to promote interdisciplinary conversations between researchers pursuing biochemical, structural, computational, or systems approaches such that their collaborative efforts would lead to critical breakthroughs in important areas of RNA research. The RNA Salon meets monthly to highlight local RNA research.



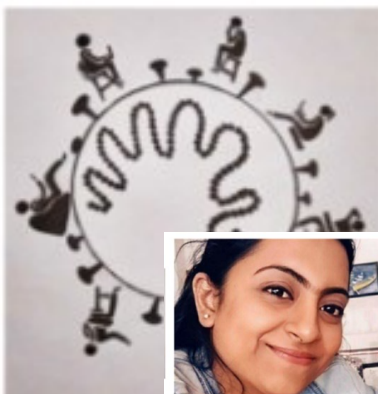
HVRC: Highlighting research while social distancing

🌀 HVRC “RNA in the Age of COVID-19” contest

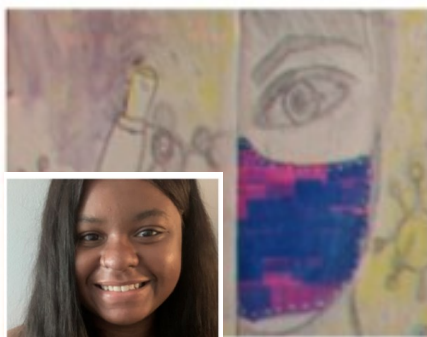
The HVRC held a competition titled “[RNA in the Age of COVID-19](#)”, where students and post-doc submitted artwork and essays along the contest title theme. Winners in either the art or essay competition were announced at the last HVRC meeting on May 19th, 2020.

Art Contest Winner

1st Place \$100 Prize: Kahini Sarka



2nd Place \$50 Prize: Deniece Brown

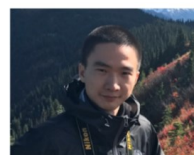


Essay Contest Winners

1st Place \$100 Prize

Xiaolong Dong

[Blessings from the curse of COVID-19](#)



2nd Place \$50 Prize

Pheonah Badu

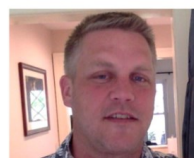
[RNA in the age of COVID-19](#)



3rd Place \$50 Prize

Daniel Woods

[sapient tendrils](#)



HVRC Trainee Presentation Award

Jibin Punnoose, PhD, a postdoc in the [Halvorsen Lab](#) was awarded the Hudson Valley RNA Club RNA Salon-sponsored Trainee Presentation Award. This award was for his presentation on “*High Throughput Single-molecule Investigation using a Centrifuge Force Microscope*” and comes with a \$150 prize.

RNA Institute Collaborative Summer Retreat

The RNA Institute held its first Summer Collaboration Retreat at the Carey Institute for Global Good in Rensselaerville, NY over two days in the summer of 2019. The retreat was aimed at identifying opportunities for collaboration between faculty, sharing recent research results and enjoying time with colleagues and students. Based on faculty, staff and trainee responses, the event was an enormous success. We had over 90 participants representing 29 labs and 5 institutions.

Given the RNA Institute's focus on training the next generation of RNA researchers, we dedicated the first day of the retreat to trainees and students. Over 25 trainees from Institute's affiliated labs presented posters on their recent research findings. Following poster presentation and judging, trainee poster awards were given to **Shane Breznak** and **Alicia McCarthy** of the **Rangan Lab**, **May Lee** of the **Melendez and Begley Labs**, and **Alyssa Hoy** of the **Royzen Lab**. Dr. Scott Tenenbaum also led a career panel of UAlbany faculty and local industry scientists to discuss the wide range of career paths available to students in the life sciences. Additionally, Drs. Tom Begley and Alex Valm chaired a panel on rigor and reproducibility, a key component of the recently awarded T32 training grant from the National Institutes of Health. Strengthening trainee presentation skills, career planning and networking opportunities are critical components of the RNA Institute's plan to produce future STEM leaders. Outside activities including hiking, kickball and socializing were also part of the schedule, with fun had by all!



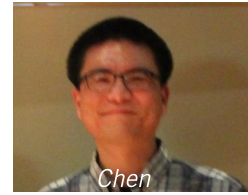
RNA Institute faculty, staff and trainees @ Collaborative Retreat

The second day of the retreat focused on fostering collaborations between faculty, with 16 additional posters and lightning talks by each of the 29 labs represented at the retreat. These short overview talks provided an excellent catalyst for identifying opportunities for collaborations between faculty that are spread across 5 different Institutions. Sparking collaborations between faculty and trainees helps to build stronger collaborative research programs which are key to our faculty acquiring the large multi-PI grants from federal funding agencies. ... continued on next page

Concluding the Retreat, our Faculty Advisory Board and Management Team (Tom Begley, Marlene Belfort, Andy Berglund, Doug Conklin, and Scott Tenenbaum) presented awards to following RNA Institute Community members

Director's Award for Excellence in RNA Research:

Dr. Alan Chen



Award for Outstanding Research by an RNA Scientist:

Phensinee Haruehanroengra

RNA Institute Award for Outstanding Mentoring:

Dr. Gabriele Fuchs



Belfort, Berglund, Conklin, Tenenbaum

RNA Citizens Award:

Paul Gumpfer



Poster award were also given to ***Shane Breznak*** and ***Alicia McCarthy*** of the **Rangan Lab**, ***May Lee*** of the **Melendez** and **Begley Labs**, ***Alyssa Hoy*** of the **Royzen Lab**.



2019 Poster Award winners and Institute faculty

RNA Retreat: Life and living in a science community



The retreat included time for everyone to relax, bond and enjoy some fun together. There were spirited games of kickball, badminton and plenty of s'mores roasted over the outdoor fire. The Carey Institute provided an amazing backdrop for a wonderful retreat. Increasing a sense of community within the RNA Institute that extend beyond its physical borders is important to creating a living science community that supports its members and grows in an organic fashion.



Supporting Diversity and Inclusivity in STEM

One of the strengths of The RNA Institute is the diversity of our faculty's research and the broad range of disciplines. However like most institutions of higher education, the diversity of faculty, graduate and postdoctoral trainees lags behind the diversity of UAlbany's undergraduate and our surrounding communities population. In line with the University's mission to ensure that diversity, in its people and in its ideas, drives excellence in everything that it does, the RNA Institute has launched a multi-pronged approach to increasing diversity and support inclusivity at the Institute and across STEM disciplines.



✿ RNA Institute Undergraduate Summer Program

The RNA Institute sponsors a summer undergraduate program to promote STEM training related to RNA sciences. Our focus in the last two years has been to increase minority representation in this program to ensure diversity in the next generation of potential graduate students. In 2019 and 2020, 13 URM students participated in the program with partial funding from the University's Strategic Allocation of Resources (StAR) program. This year's summer program is designed to be fully remote and includes bioinformatics analysis of COVID-19.

✿ Recruitment Initiatives

To directly address the pipeline of recruits to the RNA Institute, our affiliated faculty and graduate students visited Colleges and Universities to directly speak to and recruit graduate students from Institutions with strong URM populations. These initiatives, also supported by UAlbany's StAR funding, enabled RNA Institute faculty and trainees to visit over a half dozen of these institutions in 2019/2020. This outreach effort, with its focus on recruiting underrepresented minorities (URM) was able to reach over 150 undergraduates and will be ongoing in future years.

✿ RNA Institute Symposium Diversity Program

Although the 2020 RNA Institute Symposium was postponed due to COVID-19, travel fellowships were awarded to under-represented minority (URM) undergraduate and graduate trainees to participate in the RNA symposium. These awards will be carried over to the 2021 symposium, where we hope to further foster and support URM voices in our program to strengthen inclusion.

✿ Graduate training and diversity: T32 RNA Fellows Program

The RNA Fellows program, supported by an NIH T32 Training grant is supporting diversity at UAlbany. One quarter of the 2020-2021 class are URM fellows, with plans to increase representation in future classes. This program provides a comprehensive, intellectually rigorous and individualized graduate training experience in the principles of RNA and related technologies that have applications in human health and disease.



✿ Advising the Muscular Dystrophy Association (MDA) on diversity

RNA Institute Director, Andy Berglund, is advising MDA on its new initiative to provide diversity supplements to undergraduate and graduate students. This initiative, patterned after the NIH diversity supplement program, aims to improve the diversity of researchers in the muscular dystrophy field. The program's goal is to support diversity while streamlining the application process, reducing the overall administrative burden and greatly increase the time to award compared to the NIH program. Being a smaller organization than the NIH, the MDA can be more nimble and efficient in its effort to support diversity.

✿ NIH Diversity Supplements

The NIH diversity supplement program was established to increase diversity in the research workforce by providing training, mentorship and career development opportunities to individuals who are underrepresented in biomedical, behavioral, clinical, social and basic sciences research. At the RNA Institute, this program helps support a number of students and is part of the Institute's program to diversify our trainees. To further support this effort, the Institute is encouraging and offering bridge funding for faculty to take advantage of the NIH diversity supplements to recruit and train a diverse biomedical workforce.

✿ RNA Café

To further promote discussion surrounding diversity in the STEM field, the RNA Institute's upcoming year of RNA Café speakers' Series will focus on highlighting URM voices in the STEM field and will host panel discussions on practical solutions to improving diversity in STEM

✿ Male Faculty 'Ambassadors' Promote Gender Equity in the STEM Fields

Drs. Berglund and Rangan participated in a panel discussion hosted by Women in Science and Health (WISH) and pledged a more active role in achieving gender equity among faculty in science and health fields. Practical actions were discussed that could be taken to ensure equitable hiring and promotion processes and to remove barriers to women's advancement.

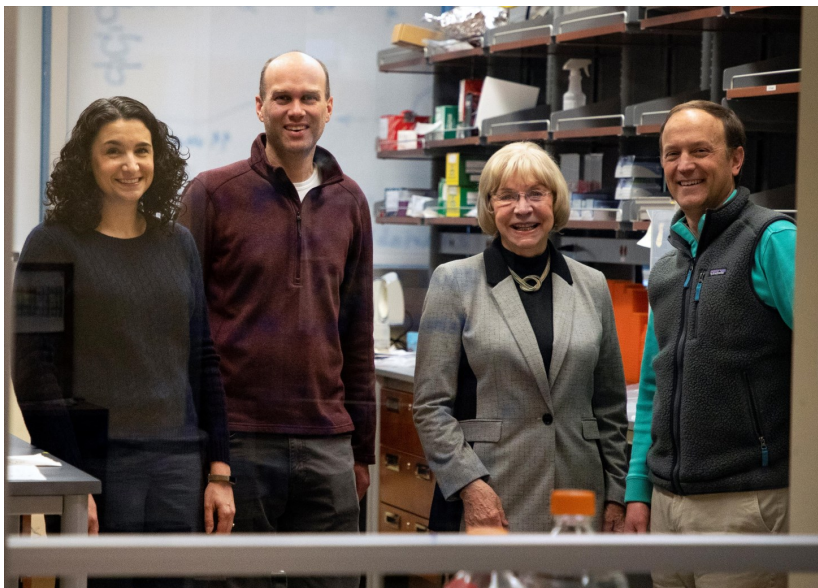


Image: Women of science and male ambassadors get together in the RNA Institute.

(Left to right): Kristen Corbosiero of DAES, Ken Halvorsen of the RNA Institute, Edelgard Wulfert, former CAS dean, of Psychology, and Andy Berglund, Director of RNA Institute.

(Photo by Patrick Dodson)

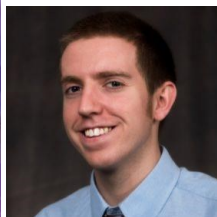
New Faculty and Staff

Dr. Kaalak Reddy — *Research Scientist, Adjunct Assistant Professor of Biological Sciences*



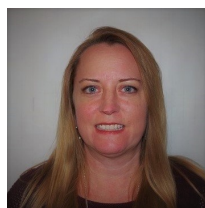
Kaalak joined the RNA Institute in Fall of 2019. Kaalak completed an Honours Genetics degree from Western University in London, Canada, then completed a PhD in Molecular Genetics from the University of Toronto and the Hospital for Sick Children in Professor Christopher Pearson's lab studying the molecular mechanisms of microsatellite expansion disorders with a focus on myotonic dystrophy and C9orf72 amyotrophic lateral sclerosis-frontotemporal dementia. After a 3-year postdoctoral fellowship at the MRC Human Genetics Unit of the University of Edinburgh, UK in Professor Andrew Jackson's lab studying the role of non-canonical nucleotide incorporation into the genome in human disease, he joined Professor Berglund's lab in the Center for NeuroGenetics at the University of Florida College of Medicine as a Myotonic Dystrophy Foundation Fellow. There he focused on small-molecule screening to identify novel compounds and cellular targets that modulate RNA toxicity in myotonic dystrophy. Kaalak is currently investigating how RNA toxicity can be modulated in neuromuscular diseases.

Ryan Meng — *Bioinformatics Support Specialist*



Ryan received a B.Sc (Biochemistry) and recently completed a M.Sc (Applied Bioinformatics and Genomics) from the University of Oregon. His research at the University of Oregon focused on de novo transcriptome assembly and differential gene expression analysis of the mosquito species *Wyeomyia Smithii* in addition to differential gene expression analysis of patients who underwent total knee replacement surgery. He joined the Berglund lab in September 2018 and the RNA Institute in Spring 2019. He is currently working with many different labs in the Institute to support their genomic studies. This summer he led the bioinformatics training of the students in the Institute's summer undergraduate program.

Donna Willey — *Office Assistant*



Donna began working at the RNA Institute in November of 2019. She is the Administrative Assistant to the Administrative Manager and the Director. She provides administrative support for Institute staff and affiliated faculty. She has worked in various office settings supporting teams for over 20 years and studied liberal arts at SUNY New Paltz with a concentration in graphic design.

Liisa Koski — *Science Communication Specialist*

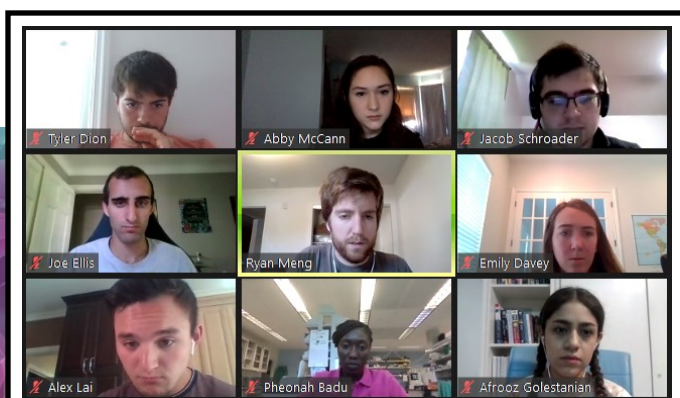


Liisa received her B.Sc. from the University of Guelph in Molecular Biology and Genetics and an M.Sc. in Biology from McMaster University (Canada). Her career as a Bioinformatician spans over 17 years in both academic and commercial settings in Germany, Canada and the United States. She started working part-time for The RNA Institute in February 2020. As a Science Communications Specialist Liisa is responsible for creating a wide range of published content and communication strategies for a technical scientific audience highlighting the strengths and scientific achievement of The RNA Institute and publicizing these achievements through outreach activities.

Educating students and teachers on RNA Science

✿ Education and training, in person or virtually, is key to our success

In keeping with our efforts to train the next generation of RNA researchers and to bring talented, diverse trainees to the RNA Institute and UAlbany, we have been working with the Center for Elimination of Minority Health Disparities (CEMHD). Starting in 2018/2019, RNA Institute faculty have helped CEMHD host students from a SUNY Downstate Health Sciences University pipeline program. This Summer Program in Translational Disparities and Community Engaged Research (SPRINTER) provides students with research skills, networking and outreach opportunities as well as training in basic science techniques. While in the past, our faculty have hosted the students for an in person visit to the RNA Institute, this year due to the COVID-19 pandemic, we will be hosting this student virtually. Our center director, working with Institute staff and faculty have developed a [virtual tour of the Institute](#) with videos taking visitors from our construction in 2013 right through to our current facility. This approach is an excellent way to reach out to students who are unable to visit the institute. We are producing several variations of the video to highlight different aspects of the Institute to assist with recruitment. We hope to continue to host the SPRINTER students, in person or virtually, and help develop a strong connection between RNA research and Minority Health Disparities.



RNA Institute staff Ryan Meng (yellow box-top) leads virtual class on bioinformatics programming (slides – bottom)

Running your Alignment/Output

- After you have downloaded STAR you can run your job using **sbatch STARAlign.srun**
 - Run either source `~/bashrc` or export
`PATH="/network/rit/lab/bioinformatics/lab/YourFolderInTheBioinformaticsLabFolder/miniconda3/bin:$PATH"`
 - Can check to see it worked by running **which conda** (should give you the path)
 - Then run: **conda install -c bioconda star**
- To submit the job run **sbatch STARAlign.srun**
- Watch for errors and make sure all of your alignments finish (**squeue -u YourNetId**)
- Possible issues: Memory, file locations, etc.
- We will discuss the output files, SAM and BAM files, and differential gene expression analysis next week



NYS Master Teacher Program

The NYS Master Teacher Program is an organization that consists of well qualified public school teachers, from every district in the state, who go through an extensive interview and competitive selection process to become a Master Teacher. Only the best STEM educators in the state are eventually selected for the program. Each Master Teacher commits to an additional 50 hours of professional development each year during their four year tenure and receives a stipend during this time. One of the professional development opportunities available to the Master Teachers are state wide mini-courses. Dr. Andy Berglund, Director of the RNA Institute, collaborated with the program by offering a mini-course entitled: Understanding RNA structure and function leads to therapeutic strategies for disease. This successful collaboration was attended by 30 high school science teachers who participated both in person and remotely.

Awards and Recognition

🌀 Faculty Awards

Dr. Marlene Belfort named academic Laureate by the UAlbany Foundation as well as an honorary degree at the University of Cape Town
<https://www.rna.albany.edu/marlene-belfort-named-academic-laureate-ualbany-foundation/>



UAlbany President Havidán Rodríguez & Dr. Marlene Belfort (middle) surrounded by RNA Institute faculty and friends



Drs. Marlene & Georges Belfort with honorary degrees

Dr. Alan Chen received a Research Opportunity Award to initiate a collaboration with Prof. Josh Blose of SUNY Brockport and bring Brockport undergraduates to present posters at next year's RNA Symposium.

Dr. John Cleary was awarded the Spring 2020 Faculty Research Award.

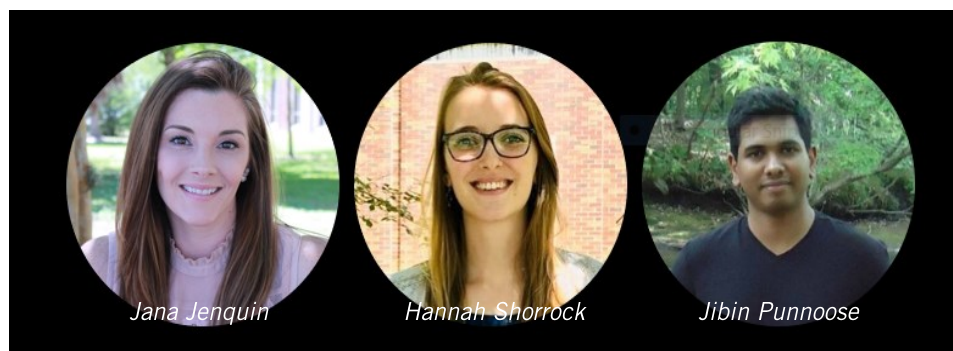
Dr. Laura Kramer received the Richard M Taylor award from the American Society of Tropical Medicine and Hygiene.

Dr. Arun Richard Chandrasekaran was selected to be on the Community Board of the journal Nanoscale Horizons.

🌀 Postdoctoral Awards

Dr. Jana Jenquin was awarded a two year post-doctoral fellowship award from Myotonic (formerly MDF).

Dr. Hannah Shorrock was awarded a National Ataxia Foundation Post-doctoral Fellowship Research Grant of \$35,0000.



Jana Jenquin

Hannah Shorrock

Jibin Punnoose

Dr. Jibin Punnoose won Best Talk Award presenting at Workshops for Interaction and Scientific Collaboration (WISC) at SUNY Albany.

🌀 RNA Fellow Awards

Nicole Ralbovsky was awarded the NY/NJ section for the 2020 Society for Applied Spectroscopy's Graduate Student Award.

Nicole Ralbovsky was awarded the Eastern Analytical Symposium Graduate Student Research Award.
<https://www.rna.albany.edu/rna-fellow-finishes-program-with-two-graduate-student-awards/>

Graduate Student Awards and Accolades

🌀 Graduate Student Awards

Clare Miller was awarded 3rd place in the 2020 Three Minute Thesis (3MT) Speech Competition and the Initiatives for Women Karen R. Hitchcock New Frontiers Fund Award.

Carl Shotwell was awarded a Myotonic Dystrophy Fellowship .

Jesus Frias was awarded an NIH doctoral supplement

Shane Beznak was awarded Outstanding Teaching Assistant of the Year from the Biology Department and is a recipient of the Lawrence and Marie Shore Scholarship

Kahini Sarkar won Best poster in the Workshops for Interactive and Scientific Collaboration (WISC)

Phensinee Haruehanroengra was awarded the RNA Institute award for Outstanding research by an RNA Scientist 2019



🌀 Travel Awards

Ann-Marie Wilhelm received the Annual Biomedical Research Conference for Minority (ABRCMS) Travel Award 2019.

Marissa Louis was award an RNA Institute travel award and the American Society of Virology travel award to attend the American Society for Virology (Minneapolis, MN July 20-24, 2019)

Rachel Netzband was awarded an RNA Institute travel award to attend the American Society for Virology (Minneapolis, MN July 20-24, 2019)

Justin Waldern was awarded an RNA Institute travel award to attend the Mobile Genetic Elements Conference (Woods Hole, MA Aug 29-31, 2019)

Olga Novikova was awarded an RNA Institute travel award to attend the Mobile Genetic Elements Conference (Woods Hole, MA Aug 29-31, 2019)

Hesan Waly received a travel award to attend the “Science Without Borders” Scientista Symposium (Boston, MA, March 29th-31st 2019)

Nicole Ralbovsky received an RNA Institute travel award to attend the PITTCON Conference and Exposition (Chicago, IL, March 1-5, 2020)

Lifeng Zhou received an RNA Institute travel award to attend the Biophysical Society Annual Meeting (San Diego, CA, Feb 15-19, 2020)

Sara Evke received an RNA Institute travel award to attend the 2nd annual RNA-targeted Drug Discovery Conference (Boston, MA, Dec 2-4, 2019)



*Hesan Waly (far right) and Fuch's members
@ 2019 Scientista Symposium*

Undergraduate Awards

Undergraduate Student Awards

Five undergraduate students were awarded the 2020 Presidential Award, selected by the Dean of the College of Arts and Science who was impressed with the quality of research skills, training and project.

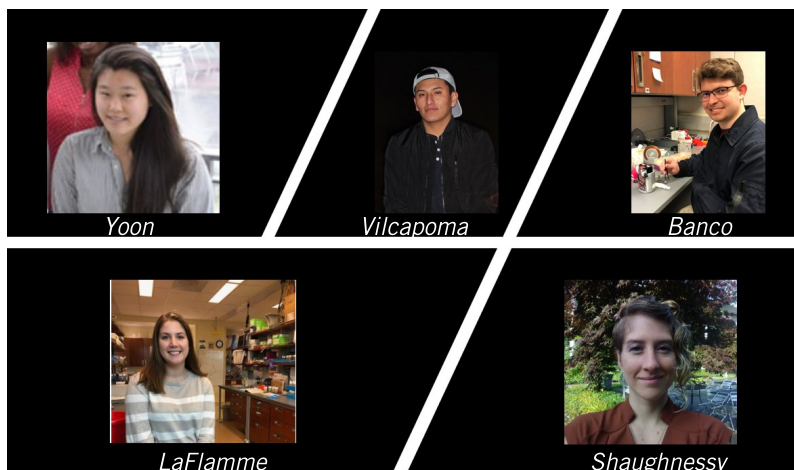
Hyun Ah Michelle Yoon (Fuchs Lab)

Javier Vilcapoma (Halvorsen Lab)

Thomas Banco (Halvorsen Lab)

Kara LaFlamme (Rangan Lab)

Sharon Shaughnessy (Berglund Lab)



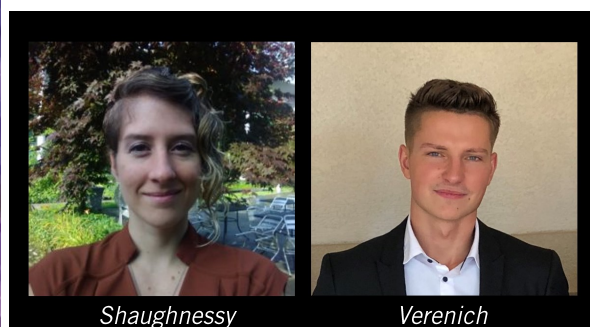
Yoon

Vilcapoma

Banco

LaFlamme

Shaughnessy



Shaughnessy

Verenich

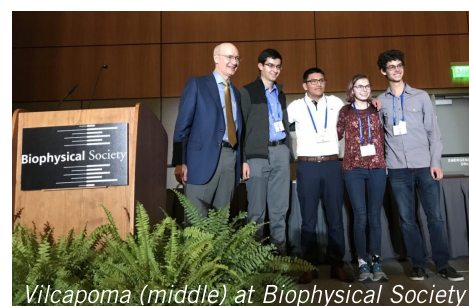
Sharon Shaughnessy and **Marc Verenich** (Berglund Lab) were awarded the Situation Prize for Research.

This research award was created through the generous donation of Damian Bazadona, a '98 graduate from the University at Albany with a Bachelor of Science in Business Administration. He is the Founder and President of Situation – a digital agency that helps brands build

passionate communities through digital-first marketing strategies. Damian strongly believes in giving back to his own community, and he has provided the Center for Undergraduate Research and Community Engagement (CURCE) and undergraduates with access to the first-ever award for student participation in research, scholarship, and creative activities.

Javier Vilcapoma (Halvorsen Lab) won “Best Undergraduate Poster” presenting his work on “*Tailoring the biostability of DNA nanostructures*” at the Biophysical Society Meeting in San Diego.

In addition Javier won runner up for best poster at the Life Sciences Research Symposium XI and a travel award from the CURCE to attend the National Collegiate Research Conference (NCRC) at Harvard University.



Vilcapoma (middle) at Biophysical Society

RNA Institute Undergraduate Fellowship Awardees 2019



Left to right: Ian Rapisarda (Rangan Lab), Cassadra Cavaliere (Halvorsen Lab), Javier Vilcapoma (Halvorsen Lab), Nicholas Labbe (Dey Lab), David Fast (Fuchs Lab), Rena Collandra (Larsen Lab), Ishmeet Sekhon (Sheng Lab), Sharon Shaughnessy (Berglund Lab), Eva Clervoyant (Berglund Lab), Emily Davey (Berglund Lab)

Publications

🌀 Sharing our message and results with the world

Publications are the heart of the RNA Institute, they enable our researchers to communicate their findings with the larger UAlbany and global research community. We are extremely proud of our contributions to the diverse fields of RNA science this past year, which includes over 100 primary publications in a variety of highly ranked journals. Collaboration and interdisciplinary research are a key feature and strength of the RNA Institute. We are extremely pleased that many of 108 publications by RNA Institute faculty and members this year held joint authorship with another RNA Institute member. This is a trend that we will build upon in the future as we strive to build joint collaborative research programs that advance RNA-based research in biology, chemistry, physics, nanobioscience and biomedical sciences. Diversity in collaborations and our scientific approach are key to our success in publishing as well as acquiring research grants.

A full list of RNA Institute publication can be found on our newly revised website (<https://www.rna.albany.edu/recent-publications/>) which highlights the diversity and quality of research being put out by our faculty. Highlights of our recent publications from across our five primary affiliated departments (Biological Sciences, Chemistry, Biomedical Sciences, RNA Institute and other) include:

🌀 Biological Sciences

Gli3 Regulates Vomeronasal Neurogenesis, Olfactory Ensheathing Cell Formation, and GnRH-1 Neuronal Migration. Taroc EZM, Naik AS, Lin JM, Peterson NB, Keefe DL Jr, Genis E, **Fuchs G**, Balasubramanian R, **Forni PE**. *J Neurosci*. January 08, 2020



The epitranscriptomic writer ALKBH8 drives tolerance and protects mouse lungs from the environmental pollutant naphthalene. Leonardi A, Kovalchuk N, Yin L, Endres L, Evke S, Nevins S, Martin S, Dedon PC, **Melendez JA**, Van Winkle L, Zhang QY, Ding X, **Begley TJ**. *Epigenetics*. April 17, 2020

Spliceosomal Prp8 intein at the crossroads of protein and RNA splicing. Green CM, Li Z, Smith AD, Novikova O, Bacot-Davis VR, Gao F, Hu S, **Banavali NK**, Thiele DJ, Li H, **Belfort M**. *PLoS Biol*. October 10, 2020

Drug Screen Tugs at Common Thread for Repeat Disorders. **Reddy K**, **Cleary JD**, **Berglund JA**. *Trends Pharmacol Sci*. February 01, 2020

🌀 Biomedical Sciences

New Twists on Long Noncoding RNAs: From Mobile Elements to Motile Cancer Cells. Tuan M Nguyen, Sumayya Alchalabi, Adewunmi Oluwatoyosi, Ali S Ropri, **Jason I Herschkowitz**, **Jeffrey M Rosen**. *RNA Biol*. June 10, 2020

West Nile Virus Fidelity Modulates the Capacity for Host Cycling and Adaptation. Haley S Caldwell, Kiet Ngo, **Janice D Pata**, **Laura D Kramer**, **Alexander T Ciota**. *J Gen Virol*. February 18, 2020

RNA Institute

Exceptional Nuclease Resistance of Paranemic Crossover (PX) DNA and Crossover-Dependent Biostability of DNA Motifs. Arun Richard Chandrasekaran, Javier Vilcapoma, Paromita Dey, Siu Wah Wong-Deyrup, **Bijan K. Dey, Ken Halvorsen**. *J. Am. Chem. Soc.* March 25, 2020 <https://www.rna.albany.edu/biostability-in-dna-structures-04-2020/>

How to Perform miRacles: A Step-by-Step microRNA Detection Protocol Using DNA Nanoswitches. Chandrasekaran AR, **Dey BK, Halvorsen K**. *Curr Protoc Mol Biol.* March 01, 2020

Dynamic RNA acetylation revealed by quantitative cross-evolutionary mapping. Aldema Sas-Chen, Justin M. Thomas, [...] **Qishan Lin**, Schraga Schwartz. *Nature*. June 17, 2020



Chemistry

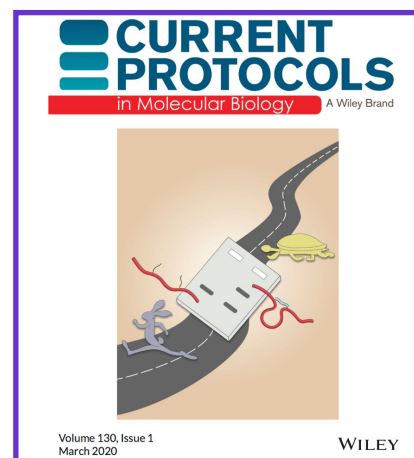
Base-Pair Conformational Switch Modulates miR-34a Targeting of Sirt1 mRNA. Lorenzo Baronti, Ileana Guzzetti, Parisa Ebrahimi, Sarah Friebe Sandoz, Emilie Steiner, Judith Schlagnitweit, Bastian Fromm, Luis Silva, Carolina Fontana, **Alan A. Chen** and Katja Petzold. *Nature*. May 27, 2020

<https://www.rna.albany.edu/chen-nature-publication-05-27-2020/>

RNA Phosphorothioate Modification in Prokaryotes and Eukaryotes. Ying Wu, Yaning Tang, Xiaolong Dong, Ya Ying Zheng, Phensinee Haruehanroengra, Song Mao, **Qishan Lin, Jia Sheng**. *ACS Chem. Biol.* April 10, 2020

<https://www.rna.albany.edu/sheng-lab-discovers-new-rna-modification/>

Raman spectroscopy and chemometrics: A potential universal method for diagnosing cancer. Ralbovsky NM, **Lednev IK**. *Spectrochim Acta A Mol Biomol Spectrosc.* August 5, 2019



Other (Nanobioscience, Physics, Mathematics and more)

HuR counteracts miR-330 to promote STAT3 translation during inflammation-induced muscle wasting. Mubaid S, Ma JF, Omer A, Ashour K, Lian XJ, Sanchez BJ, Robinson S, Cammas A, Dormoy-Raclet V, Di Marco S, **Chittur SV, Tenenbaum SA**, Gallouzi IE. *Proc Natl Acad Sci U S A*. August 27, 2019

How Anionic Lipids Affect Spatiotemporal Properties of KRAS4B on Model Membranes. Ngo VA, Sarkar S, Neale C, **Garcia AE**. *J Phys Chem B*. June 8, 2020

Probing Remote Residues Important for Catalysis in Escherichia Coli Ornithine Transcarbamoylase. Lisa Ngu, Jenifer N Winters, Kien Nguyen, Kevin E Ramos, Nicholas A DeLateur, Lee Makowski, **Paul C Whitford**, Mary Jo Ondrechen, Penny J Beuning. *PLoS One*. February 06, 2020



THE RNA INSTITUTE

COLLEGE OF ARTS & SCIENCES UNIVERSITY AT ALBANY

Research opportunities at all skill levels

- **Fundamental RNA Biology**

Explore questions surrounding the role of RNA in biology, RNA evolution, RNA structure and function, RNA modification & the RNA World Theory

- **RNA in health and disease**

RNA plays a central role in a number of human diseases and in regulating health outcomes. Understand how RNA contribute and can be used to cure disease

- **Computational & bioinformatics analysis of RNA**

Machine learning, advanced computational methods and bioinformatics can help understand RNA, predict its behavior and how it fits into large genetic networks

- **RNA Chemistry**

RNA plays a central role in a number of human diseases and in regulating health outcomes. Understand how RNA contribute and can be used to cure disease

- **Nanobiosciences: Building with RNA**

Explore how RNA can be used as the basis for and incorporate into nanotechnology and nanomedicine for diagnostics, drug delivery and regenerative medicine.

- **RNA Forensics & forensic chemistry**

RNA can be an invaluable tool in diagnosing the cause of death, identifying body fluids and in understanding forensic evidence.

- **Environment and RNA**

Explore how RNA can be used as the basis for and incorporate into nanotechnology and nanomedicine for diagnostics, drug delivery and regenerative medicine.

- **RNA in Virology & Immunology**

Explore how RNA can be used as the basis for and incorporate into nanotechnology and nanomedicine for diagnostics, drug delivery and regenerative medicine.

We have over 45 faculty working towards understanding the role of RNA in fundamental biological processes, developing RNA as a tool for science and harnessing this knowledge to improve human health. Our expertise ranges across Biology, Bioinformatics, Chemistry, Engineering, Genetics and Structural Biology

Training the next generation of RNA Researchers in basic and translation science

Outreach and Recruiting

At the RNA Institute, we are dedicated to recruiting the best and the brightest young scientists to UAlbany while helping to increase the presence of groups traditionally underrepresented within the STEM fields. Our ultimate goal is to increase recruitment, retention and diversity of undergraduate and graduate students at UAlbany. These efforts, which have been generously funded by private donors and the UAlbany Strategic Allocation of Resources (StAR) funds, include:



Hands-on learning helps recruitment & outreach

🌀 7th Annual RNA Institute Symposium

The RNA Institute continues to engage the community by inviting, free of charge, Capital Region high school students and teachers to attend our Annual RNA Institute Symposium. This year, we had 40 students planning to attend our 7th annual symposium. While the COVID-19 pandemic forced the postponement of the symposium until 2021, these students and teachers will be invited to next years symposium as well as a COVID-19 mini-symposium we are planning for the Fall 2020 semester.

🌀 College & University Recruitment Visits

The RNA Institute is surrounded by a large number of diverse educational institutions providing a valuable recruiting base for graduate students. This past year, RNA Institute faculty and trainees visited over a half dozen of these institutions and presented to over 150 undergraduates, with a focus on recruiting underrepresented minorities (URM). These visits also enabled us to meet over 25 faculty from these institutions to help build a future pipeline for graduate school recruitment. Based on feedback from students and faculty at these Institutions, we will be expanding this program in the 2021/2022 year.

🌀 Tech Valley High Students Visit RNA Institute

Students from Tech Valley High School (TVHS), an innovative high-tech consortium school, visited the Fuchs lab as part of an ongoing collaboration providing real world biological data for the student's statistical projects. This is the third year that the Fuch's lab has provided data from the analysis of ribosomal mutations to TVHS students. The program includes a hands-on visit to the Fuch's lab, which for most students was their first time visiting a scientific laboratory. Students had the opportunity to look at cells in culture and learned how CRISPR-Cas9 is used to knock out a ribosomal protein and test if this protein is needed by poliovirus. The students will be presenting their statistical analysis and findings in their class later in the academic year.



Fuchs Lab and Tech Valley High students

RNA Institute Donors

✿ A special thanks to our important Institute donors

Research at the RNA Institute is supported primarily by grants and awards from Federal funding agencies, such as the National Institute of Health (NIH) and National Science Foundation (NSF), and from the State University of New York (SUNY). However individual donors also make an important contribution to our efforts at the RNA Institute and without their support many of our outreach and educational efforts would not occur. We would like to take this opportunity to personally thank the following individuals and organizations for their past and present donations to the RNA Institute, our faculty, events and research

RNA Institute work is supported by these wonderful donors

Edelgard Wulfert and Family

The Gorman Family

The Eisenband Family

The Ellis Family

The Planco Family

The Sherman Family

The Weston Family

The Marigold Foundation



Edelgard Wulfert & Andy Berglund

✿ RNA Institute Open House

Making connections to the community and building bridges with those outside of the STEM field is important to the future of the RNA Institute. This year, the RNA Institute hosted our first Open House, with a select group of local citizens interested in learning more about RNA and the work of the RNA Institute. Over cocktails and light food, RNA Institute faculty and students mingled with distinguished members of the community. We were extremely

pleased that Dr. Jeanette Altarriba, our Dean of the College of Arts and Sciences was able to join us and give a short speech about her excitement for research and the work of the RNA Institute. Following the food and speeches by Dr. Altarriba and our Director, Andy Berglund, guests were able to tour the RNA Institute. RNA Institute staff and graduate students had prepared a number of demonstration stations which showed guests some of the equipment and techniques our researchers use to study RNA. This “soft” open house served as practice for a much larger open house that the RNA Institute plans to run in order to help bring private donations to our research efforts.



PhD Student Carl Shotwell demonstrates digital microscopy system while Institute Director Andy Berglund and Open House guests look on.

Future Directions

The social, health and economic disruptions at the beginning of 2020 will continue to have repercussions over the next few years for the RNA Institute and the broader scientific community. At the RNA Institute, it is our belief that we must be a part of the broader society shifts and conversations regarding diversity, inclusivity and respect, to ensure our Institute grows with the society around us. We have made recent strides at identifying our own contributions to these issues and have begun to take the necessary steps to address our deficiencies and inherent biases. As researchers, we are uniquely equipped to address these issues with facts and an eye towards the future. Individually and as a group, we are committed to making substantial and meaningful changes to how we welcome and embrace diversity in all aspects of how we practice science.

In science and research we will definitely face short-term challenges but our experience has taught us that the long-term lessons learned during this time will be invaluable not only for The RNA Institute but for society as a whole. At the Institute we have demonstrated our ability to rapidly adjust to changes in our workplace, our scientific focus and funding priorities. Moving forward, we are excited by the prospect of bringing the lessons learned during 2019/2020 along with our expertise and training to bear on current and future science and human health problems.

We are truly excited by the future ahead of us and welcome everyone to share the journey ahead. From grade school to grad school, expert and amateur, young and old, curious and creative, there is a place for you at The RNA Institute. Please reach out and join us to ***unleash greatness***.

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<https://www.linkedin.com/groups/6562019>



<https://twitter.com/TheRNAInstitute>



<https://www.facebook.com/TheRNAInstitute/>



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