



# COLORADO RNA CLUB

LATEST

## What's new from our RNA community

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### LETTER FROM THE EDITOR

Whether it is shifting the current scientific paradigm, developing tools that change the nature of the questions we ask, or creating a product that can help millions, scientists want to be at the forefront of innovation. However, innovation cannot happen at the cost of the development of an individual scientist's career.

The traditional academic path of going to graduate school, doing a postdoc, finally culminating in a tenured track position is no longer an option for most trainees, because academia today is saturated with trainees vying for a dwindling number of tenured positions.

A [May 2021 study](#) showed that the number of science and technology Ph.D. graduates from US institutions increased by around 37% since 2003, while [a study in 2014](#) showed that there were approximately 6.3 PhD graduates for every tenure track position in the biomedical sciences. Consequently, many academics have turned to industry.

In 2020, venture capital funding in the life sciences [broke records](#) despite the pandemic, highlighting the private sector, specifically start-ups, as an increasingly attractive option for scientists at all levels.

Startups involve an incredible amount of creativity, hard work, and most importantly an entrepreneurial spirit. In this issue, we wanted to celebrate the entrepreneurial spirit of some alumni from our very own member institutions: Lyndsey Linke, CEO of SiVEC Biotechnologies, Tassa Saldi, CEO of TUMI Genomics, and Travis Sanders, an R&D Scientist at Watchmaker Genomics.

We hope you enjoy reading this issue, as we enjoyed compiling it for you.

**Divya Kolakada**  
*Editor, Colorado RNA Club Latest*

### SiVEC – Pioneering the delivery of RNA based of therapeutics

by: Nicole Moss, PhD candidate at CU Anschutz

The advances in RNA biology and the emerging need for rapid and reliable antivirals have propelled nucleic acid therapeutics into the forefront of biotechnology. The administration of mRNAs, siRNAs, and even genome editing systems could drastically change disease courses and patient outcomes. While these



SiVEC Co-founder and CEO  
Lyndsey Linke, Ph.D. Personal  
photo collection.

techniques have long been used in laboratory settings, their transition into the clinic has been met with several challenges. Specifically, the mechanism for clinical delivery has remained a significant obstacle.

Lyndsey Linke was up for the challenge. As a graduate student at Colorado State University, Linke examined the biological mechanisms and feasibility of a bacterial delivery mechanism, tkRNAi. The transkingdom RNAi delivery platform (tkRNAi) utilizes nonpathogenic E. coli to transfect shRNA targeted at viral replication, a key step in viral infection. Through [this work](#), she generated a promising mechanism to administer RNAi to target viral infections, which allows people to better combat infections like avian influenza virus.

"I have always had an interest in infectious disease", Linke stated, and saw this bacterial delivery mechanism as an opportunity to overcome limitations in delivering a wide range of nucleic acid therapeutics, including mRNAs, siRNAs, and CRISPR/Cas. As the lead

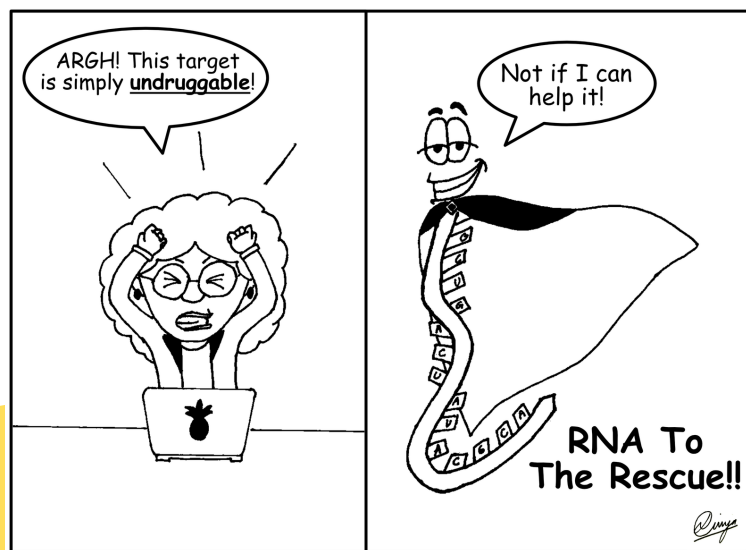
investigator on the now patented technology, Linke co-founded SiVEC where her group works on developing this novel bacterial delivery platform for both agriculturally and medically relevant nucleic acid technologies. Founded in 2016, SiVEC Biotechnologies “aims to revolutionize the delivery of nucleic acids and other biologically active cargo to enable the development of safer and more effective therapies.”

The company's first product, SiVEC-IAV, is designed for prevention and treatment of the flu. This technology uses SiVEC's bacterial system to deliver anti-viral shRNAs to the respiratory tract. The bacterial administration platform allows for easy application without systemic absorption, which would inhibit the effectiveness of the treatment, while the mechanism of action makes it easily amenable to the constantly evolving influenza virus. To date, SiVEC has 3 approved patents and 4 pending patents for their technologies. “SiVEC's bacterial delivery platform is going to be a key piece of the puzzle in getting advanced therapeutic approaches into the clinic and enable the next generation of RNA-based therapies”, Linke asserted.



The SiVEC team. Personal photo collection.

Outside of the lab, Linke is an avid swimmer – she competed at the collegiate level, qualified for the Olympic trials and now competes as a 6-time US Masters National Swimming Champion. She brings her same ambition from the water into the lab and credits her sense of adventure and “super competitive personality” to the foundation and success of SiVEC. Her competitive spirit drives her to identify therapeutic needs and race to develop a product that has catapulted SiVEC at the forefront of nucleic acid-based therapeutics.



by: Divya Kolakada, PhD candidate at CU Anschutz

## TUMI Genomics – Taking the entrepreneurial road

by: Ankita Arora, PhD, Postdoctoral Scholar at CU Anschutz

Often in science, a serendipitous encounter at a conference can redirect your trajectory in life. That's what happened with Tassa Saldi, former postdoctoral fellow at the University of Colorado Anschutz Medical Campus and co-founder and CEO at TUMI Genomics.

A few years ago at the Aspen Cancer Conference, Saldi encountered trainees asking questions like, “How do I become a professor? What does it take?”. One professor responded, “If you really want to feel accomplished, you should create something that belongs to you. Only when you own something, can you get the feeling of true achievement in a career.”

This idea stuck with Saldi, so when approached about a business endeavor, she couldn't shy away. “Alfonso Garrido-Lecca, my husband, a postdoctoral fellow at the University of Colorado Boulder, and his friend devised an idea of a startup for cancer diagnostics using genomics and they told me about it. I thought that it was really exciting and that this could be the thing that we own. Before we knew it, we laid the foundation of TUMI genomics”, said Saldi.

In the wake of the COVID-19 pandemic, what started as a startup for cancer genomics soon became a point of care diagnostics for COVID-19 with a focus on

## AN RNA DAY OF SONGS AND GONGS

by: Jillian Ramos, PhD, Postdoctoral Scholar at CU Anschutz

"RNA, RNA, - it's the molecule of the day. RNA, RNA, - it's our favorite thing to study!" Anschutz postdoctoral scholar, Allison Porman Swain, sang to the tune of "Let It Go", from the movie Frozen. It was August 1st, prominently known to RNA enthusiasts as RNA day, and the Colorado RNA Club was holding its inaugural RNA day celebration.

RNA Day is held on August 1st each year, as AUG represents the start codon of an mRNA transcript. For the first RNA Day celebration, the Colorado RNA Club partnered with Project Bridge, a scientific communication organization, to hold a Gong Show at Ratio Beer Works. Gathered outside in the charming outdoor patio, members of the RNA Club shared their RNA research in 3 minutes or less, attempting to refrain from using scientific jargon. If the audience heard a term they didn't understand, they would ring cowbells indicating the speaker had to stop and clarify.

The atmosphere was relaxed and a light buzz permeated through the crowd. Many RNA club members spontaneously volunteered to partake in the gong show. Research topics ranged from coral, to yeast, to developing trackers. Often the talks contained a bit of humor when explaining the peculiarities of model systems such as PhD candidate Claire Gillette's fat flies or when analogies



RNA Day event. Picture by Postdoctoral Scholar Madeline Sherlock

began to fall apart like with David Bentley's "RNA Maker". Nevertheless, every talk centered on RNA. With an excellent turnout of about 50 individuals for the first event, the hope is each year will generate a greater turnout, especially among the non-scientists in the community.

Upon asking Sujatha Jagannathan, one of the primary organizers, what her favorite part of the event was, she said "being back in person- the excitement reminded me how fun science could be." A big thank you to all the organizers including CU Anschutz student organizers Arely Diaz and Rachel Jones, CU Boulder student organizer Erin Richards, and Hannah Jones from Project Bridge.

developing countries. TUMI genomics mission is to create simple, accurate diagnostics that can be used in rural areas and underserved communities. "I would like to focus on a segment of the world that doesn't get a lot of attention where there's a big need for improved health care, specifically improved diagnostics." said Saldi.

The mission was realized when TUMI was awarded a grant from the International Development Bank with the goal to create a diagnostic that was feasible to use in developing countries; something that was easy to use, inexpensive, quick but still rigorous. In response, TUMI genomics developed a diagnostic tool for COVID-19 called CovidGlow, which is currently under review by the FDA. "It's exciting to use the knowledge I acquired during my time in academia to affect real

change in the world", said Saldi.

Running a startup in addition to a full-time job is nothing short of exhaustive. However, Saldi has been able to nurture TUMI while also working as the laboratory director of the COVID-19 Surveillance Lab at the BioFrontiers Institute at CU Boulder by day. The lab was doing massive surveillance of students and faculty for potential COVID exposure and is using the data obtained to look into metabolite differences and differences in respiratory microbiome between saliva from positive and negative samples. The lab is also using next generation sequencing to sequence SARS-CoV-2 variants and study the transcriptome to uncover relationships between transcript levels and variants.



# The Nucleic Acid Startup Landscape in Colorado

## Arpeggio Bio

### Therapeutics

Combines machine learning and RNA screens to generate novel therapies for cancers and inflammation diseases. Based in **Boulder, CO**.

## Viridian Therapeutics

### Therapeutics

Formerly miRagen Therapeutics. Focused on developing novel therapies for severe diseases through a patient-centric model. Therapies include a synthetic miRNA mimic, currently in Phase 2 clinical trials, developed to treat or prevent keloids. Based in **Waltham, MA** and **Boulder, CO**.

## Editas Medicine

### Therapeutics, Gene editing

Harnesses CRISPR Technology to create in vivo gene edited medicines and ex vivo gene edited cell medicines. Based in **Cambridge, MA** with facilities in **Boulder, CO**.

## Watchmaker Genomics

### NGS

Combines protein engineering, enzyme manufacturing, and data analysis and insight, for high-growth genomics applications such as NGS. Based in **Boulder, CO**.

## TUMI Genomics

### Diagnostics

Focused on developing custom diagnostics for various diseases that affect humans and plants including COVID and Hop Latent Viroid. Based in **Boulder, CO**.

## SiVEC Biotechnologies

### Therapeutics

Focused on developing drug delivery platforms for nucleic acid-based therapies that target a variety of diseases in humans and animals. Based in **Fort Collins, CO**.

## Inscripta Therapeutics

### Therapeutics, Gene editing

Has developed the MAD7 CRISPR Nuclease and is focused on automating CRISPR gene editing technology via its Onyx platform. Based in **Boulder, CO**; **Bay Area, CA** and **San Diego, CA**.

## KromaTiD

### Gene editing

Focused on genome editing and FISH. Has developed an assay that can determine changes to chromatin when gene editing, including inversions. Based in **Longmont, CO**.

## Invitae

### NGS, Diagnostics

Formerly ArcherDX. Offers NGS diagnostic services and is focused on developing in vitro diagnostics for cancers and molecular tools for labs and clinical researchers. Based in **Boulder, CO**.

Her lab director position at CU-Boulder will end in December and Dr. Saldi plans to stay as a full time entrepreneur after that. In the future, the company is planning to expand beyond the point of care diagnostics because moving into the human diagnostic market as a small startup is difficult. "You need a lot of money, there's a lot of regulations and a lot of competition", said Dr. Saldi. The company is looking at the diagnostic agricultural market, and is trying to vet the cannabis market because there are many cannabis pathogens such as the Hop Latent Viroid that can dramatically affect yield and plant physiology. Their testing is similar to COVID as the infection can be asymptomatic thus, requiring large amounts of testing.

When asked about the long-term future of TUMI, Saldi said, "In the long run, I want to move closer towards my real passion - point of care diagnostics that can make a difference in developing countries. It's unfair for healthcare to only be accessible to the rich. Healthcare should be a global thing, and whatever little we can do to fix that disparity gets my fire burning."

## Watchmaker Genomics – Intelligent by Design

by: Giulia Corbet, PhD candidate at CU Boulder

Based in Boulder and founded in 2019, Watchmaker Genomics wants to be a major player in the next-generation sequencing (NGS) space.

The startup's three founders: Trey Foskett, Stephen Picone, and Brian Kudlow, each brought a distinct skill set along with years of industry experience to lay the foundation for Watchmaker Genomics' platform. Trey Foskett, previously a co-founder and Chief Technology Officer of Kapa Biosystems, had experience in protein engineering and next-generation sequencing sample preparation. Stephen Picone, a previous co-founder at Enzymatics, was experienced in the production and purification of high-quality proteins. Finally, Dr. Brian Kudlow, former Vice President of R&D at ArcherDX, had expertise in clinical sequencing and computational biology.

by: Divya Kolakada, PhD candidate at CU Anschutz, and Giovana Breda Veronezi, PhD student at CU Anschutz

Travis Sanders, an R&D Scientist at Watchmaker Genomics, described the founders' diverse backgrounds as the "three pillars of the business." Sanders stated, "We produce all of our proteins in-house, we formulate these enzymes for high-value sequencing applications, and offer insight into the analysis of that data." Sanders described the company's future as being in "the intersection of biology, engineering, and computer science to enable breakthroughs in human health."

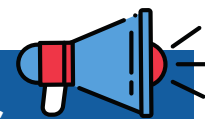
"Combining competencies across enzyme engineering, protein manufacturing and bioinformatics enables us to develop high-performance, differentiated products that address the current bottlenecks for applications in single-cell, epigenetics, and clinical sequencing", Sanders said when asked what made Watchmaker Genomics unique, "Our initial commercial focus is on high-growth genomics and life science companies", he further explained. Watchmaker Genomics plans to open up to retail customers soon.

In March of 2021, Watchmaker Genomics and Twist Bioscience Corporation announced a partnership. According to [an article in Business Wire](#), "Twist will leverage Watchmaker's expertise in enzyme engineering by incorporating the company's high-fidelity library amplification master mix into Twist's enzymatic library preparation kit, providing a superior solution that can be accessed from Twist as a single source." In May, Watchmaker Genomics announced another partnership with Molecular Loop to expand access to high-performance genetic tests for SARS-Cov-2 surveillance.

Sanders, who did his PhD in Tom Santangelo's lab at Colorado State University, found his way to Watchmaker Genomics after finishing up his graduate work in December of 2020. During his time in graduate school, Sanders dipped his toes into the NGS world and this experience turned out to be quite

valuable during his job search. Sanders' advice on how to make the transition to industry is to leverage tools like LinkedIn and go to meetups like the [Academia Industry Alliance](#) to make connections.

## ANNOUNCEMENTS



### GILLIAM GRADUATE FELLOWSHIP AWARDEE 2021

It is with great pride that the Colorado RNA Club wishes to congratulate the University of Colorado Anschutz's Ph.D. candidate, **Evan Morrison** and mentor, **Olivia Rissland** for receiving the **Gilliam Graduate Fellowship** from the Howard Hughes Medical



Evan Morrison, Gilliam Fellowship awardee. Personal photo collection.

Institute. Morrison and Rissland are one of 50 student-advisor pairs to receive this award from almost 300 applicants across the country.

The Gilliam Fellowship is awarded to students belonging to communities that are historically underrepresented in science and their faculty mentors, in a concerted effort to cultivate a more diverse and inclusive environment in the sciences. The award funds Morrison as a student for up to three years and provides Rissland with additional funding to promote diversity and inclusion within their institution.

Announcement compiled by:  
Divya Kolakada, PhD candidate at CU Anschutz



For announcements of recent RNA-relevant publications, job openings, events or awards from your lab, e-mail us at [ColoradoRNAClub@gmail.com](mailto:ColoradoRNAClub@gmail.com)

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