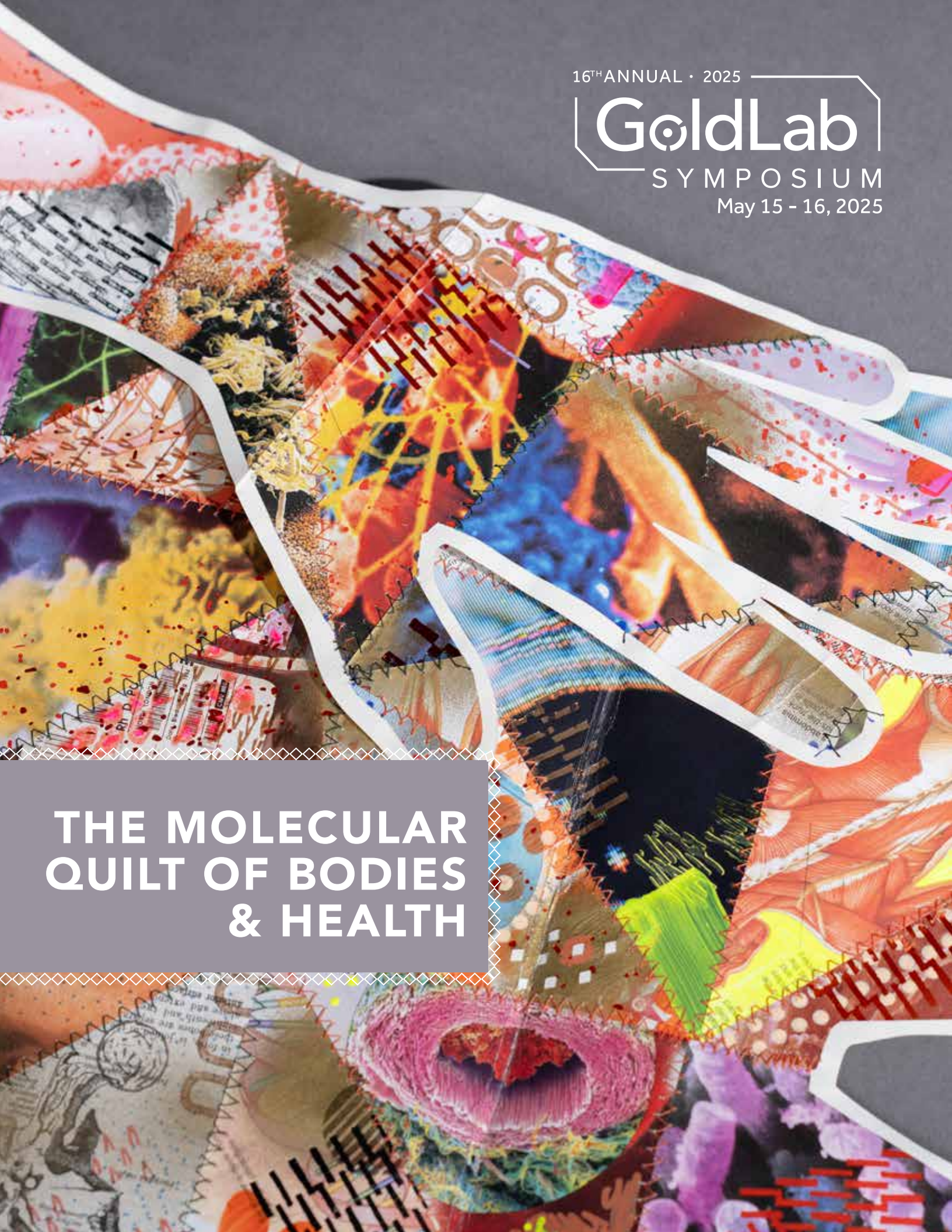
16TH ANNUAL · 2025

GoldLab SYMPOSIUM

May 15 - 16, 2025



THE MOLECULAR QUILT OF BODIES & HEALTH

ABOUT THE COVER ART

‘Body Quilt Book’ - Darin Grassman

A Message from the Artist

Two strong threads emerged in my meeting with Larry Gold and Larry Hunter this year that offered plentiful creative fodder:

1) The physical, fleshly, tangible human form at human scale, and

2) The edges of the medical mainstream

Body Quilt is a deconstructed human biology textbook that has been disbound, printed, painted, stamped, stitched, and ultimately reconstructed in a new body-book form. I drew inspiration from quilting and zines – both of which are often considered folk, activist, or outsider art and have long-established roots in community care and activism. The desire to protect ourselves and our immediate communities is strong in both lineages. A quote I read from Gee’s Bend quilters has continued to pop up in my mind while making this piece: “use what you have to make what you need.” This referred to the scarcity of materials on hand for the makers, but more largely speaks to resourcefulness, tenacity, and community strength. These qualities are emblematic of the GLS speakers this year, many of whom are “coloring outside the lines” in order to establish programs and resources for our collective health and well-being.

About the Artist:

Darin is an artist and bookbinder working across several disciplines. She works out of a studio in Colorado making custom books and boxes, as well as small editions of fine stationery from repurposed materials. In addition to painting, printmaking, design and custom bookbinding, she manages production of photography + art books for independent companies and individuals. Darin holds a BFA in Painting and MA in Textile Design. She has worked as a commercial bookbinder in Berkeley, Los Angeles, and London.

Website: dgrassman.com
Social Media: @l.a.bookmaker

SYMPOSIUM AGENDA

THE MOLECULAR QUILT OF BODIES & HEALTH

DAY 1 : THURSDAY, MAY 15TH

9:00am — **Larry Gold & Larry Hunter**
Symposium Welcome

SESSION 1: THE EVOLVING QUILT

Moderator: David Rosenman

9:05 – 9:50am — **Gil Hedley**
An Introduction to Integral Anatomy

9:50 – 10:35am — **Arthur Krieg**
The Three Flavors of Danger

10:35 – 11:05am — **BREAK**

11:05 – 11:50am — **Nelson Trujillo**
Contemporary Prevention of Major Cardiovascular Events, an Existential Crisis

11:50 – 12:35pm — **Jim Trimmer**
Open-Source Antibodies as a Path to Enhanced Research Reproducibility and Transparency

12:35 – 2:00pm — **LUNCH**

SESSION 2: FROM MOLECULES TO PUBLIC HEALTH

Moderator: Wendy Sue Swanson

2:00 – 2:45pm — **Mike Mehan**
Multiomics at Illumina: Sequencing Beyond the Genome

2:45 – 3:30pm — **Nebojsa Janjic**
Targeting of Bad Bugs in the Gut May Have Many Health Benefits

3:30 – 4:00pm — **BREAK**

4:00 – 4:45pm — **Jay Wellons**
Neurosurgical Public Health: What the Heck Is That

4:45 – 5:30pm — **Sandeep Patel**
Covid-19, the Unlikely Architect of Public Health’s Future

All times are in Mountain Time | MDT UTC-06:00

DAY 2 : FRIDAY, MAY 16TH

9:00am — **Larry Gold & Larry Hunter**
Symposium Welcome

SESSION 3: COMPUTATION & THE QUILT

Moderator: Nicholas Tatonetti

9:05 – 9:50am — **Dean Noble-Tolla**
Powering Proactive Healthcare: Leveraging AI to Reshape Our Healthcare System

9:50 – 10:35am — **Hansilla Alaigh**
The Intelligence Revolution: Building WISE-R’s Living Platform

10:35 – 11:05am — **BREAK**

11:05 – 11:50am — **James Fraser**
The AVOID-OME: Speeding Drug Discovery by Unlocking Machine Learning on Anti-Targets

11:50 – 12:35pm — **Noémie Elhadad**
Human-Centered AI Approaches to Endometriosis Detection and Management

12:35 – 2:00pm — **LUNCH**

SESSION 4: WEAVING THE QUILT

Moderator: Duey Freeman

2:00 – 2:45pm — **Krystal Tsosie**
Indigenous Health Through DNA and Data Futures

2:45 – 3:30pm — **Taylor White Moffitt**
Self Compassion Delivers Everything Self Improvement Promised

3:30 – 4:00pm — **BREAK**

4:00 – 4:45pm — **Joshua Rothman**
AI and Human Values

4:45 – 5:30pm — **Chris Janjic & Brandon Smith**
Beyond Firebreak: Mental Health and Reentry for Incarcerated Firefighters

WELCOME FROM LARRY GOLD

Years ago I read Ernest Becker's 1973 book Denial of Death, and since then I have told everyone and anyone that it is a very important book. My experiences this year, and my experiences with our annual symposia, have caused me to (at least slightly) alter my thinking. The part Becker got right is just how painful it is, for most people, to contemplate death as the end of our lives. These symposia have been about using modern biology experimentation to extend life without disease and sadness. For sure that trajectory is happening now, and so that is the good news – people are enjoying longer and healthier lives. The bad news is that most people, including me, have not made peace with death.

This year three very large events happened. First is that people my age, and younger, are dying, just gone. People deal with those events in a variety of ways, most of them depressing. As Becker said, most common is simple denial. In former GLS speaker Danny Klein's book, he quoted his father-in-law, who said to Danny while he was dying "what a pleasure it was to have lived!" Most of us are not there. It is just a step too far… An important person from the symposium last year, Richard Deckelbaum, died suddenly this year, and his friends were plunged into sadness. Chuck Lillis, a Board member at SomaLogic also died, and left a huge hole in our lives; for our two decades of friendship and mentorship I never knew a person who enjoyed life more, and for whom values were more important than anything else.

Second was an anatomy class we took this year with our first speaker, Gil Hedley. For a week we did human dissections under his direction. There never were deeper reasons to love our bodies, ourselves – we saw the complexity and the beauty, the odd juxtapositions, the cramped space in which our organs live. We saw enough to be in awe of our bodies and to think, in a shallow way, how does that work so well? When one takes a class with Gil, one is changed forever.

Third was my own brush with the medical system. I needed work on the pacemaker I have had for fourteen years. I got helped by another of our speakers, Nelson Trujillo, who found just the right surgeon in Denver to do something called a "lead extraction." As I contemplated my fate in the days before the procedure, I realized that for all the jokes I have made for 80+ years, I was terrified. I want to live, not die. It is "such a pleasure to have lived" and yet the truth of our individual futures is not great. As I drifted into the dream world of anesthesia for five hours, I knew that I might wake up and that I might not. How can any of us do the best we can, for ourselves and our loved ones, with this extraordinary truth staring us right in the face? What seems amazing to me is that we have gathered here for many years to learn about making things better for everyone without trying to live forever. I think that is as good as it can be, and I am grateful to have been part of our journey. And it has been a remarkable journey, with new friendships emerging over and over.

Our human spirits are indomitable, fragile and as impermanent as we are.

Larry Gold

FROM LARRY HUNTER

Larry G's thoughts on (not) making peace with death makes me think about the gusto with which he pursues life. This symposium has always been about both the pursuit of longer, healthier lives, and also making the most of the life we have. The latter task turns out to be just as challenging as the former.

The question of what constitutes a good life dates back at least as far as Aristotle. As scientists, we now turn to evidence to pursue these questions. Although it is difficult to study how to live a good life, many have tried. The Harvard Study of Adult Development has been going for longer than Dr. Gold has been alive, and shows clearly that the central driving factor for a healthy longevity is the strength of connections we have to other people. Interestingly, the study also shows that participants became happier as they aged. Perhaps as we are forced to confront our own mortality, emotional well-being becomes more of a priority.

The dichotomy Aristotle contemplated was between a life of hedonism versus one of areté, that is, virtue and excellence. In the thousands of years since, many theories of well-being have proliferated trying to balance the two. Scientific evidence suggests that both are important. People's reported happiness improves both with more pleasant experiences and with a sense of accomplishment or meaning, even if gaining it wasn't pleasant.

More recently, I've been struck by the evidence I first saw in a paper by Shigehiro Oishi and Erin Westgate that in addition to pleasure and meaning, the variety of experiences in one's life contributes independently to well-being. A significant number of people around the world report they would choose a psychologically rich life at the expense of a happy or meaningful one.

I like to think that the symposium brings together all three aspects: there are moments of joy and connection, a community of people doing meaningful work, and a rich variety of intriguing and surprising experiences. I hope you find it increases your well-being as much as it does mine.

Larry Hunter

SCHEDULE DAY ONE

SESSION 1: THE EVOLVING QUILT

Moderator: David Rosenman

9:05 – 9:50 AM **Gil Hedley**
An Introduction to Integral Anatomy

9:50 – 10:35 AM **Arthur Krieg**
The Three Flavors of Danger

10:35 – 11:05 AM **Break**

11:05 – 11:50 AM **Nelson Trujillo**
Contemporary Prevention of Major Cardiovascular Events, an Existential Crisis

11:50 – 12:35 PM **Jim Trimmer**
Open-Source Antibodies as a Path to Enhanced Research Reproducibility and Transparency

12:35 – 2:00 PM **Lunch**

DAY ONE

MODERATOR SESSION ONE

DAVID ROSENMAN, MD, MBA

Physician at the Mayo Clinic

David Rosenman is a physician at the Mayo Clinic in Rochester, Minnesota and on the faculty of its schools of medicine and graduate medical education. He has mentored hundreds of medical students, residents, and fellows, and received many teaching awards, including Teacher of the Year from three graduating classes of the Mayo Clinic Alix School of Medicine.

At Mayo and elsewhere, he advises at the intersection of care delivery and enterprise strategy, helping health systems, startups, and governments to redesign operations, integrate AI, and scale technology-enabled models in ways that preserve and prioritize compassion. His work spans advisory roles across North America, the Middle East, and Asia, and includes board service and investment guidance for health, wellness, and health tech ventures.

Dr. Rosenman holds degrees in Medicine (Indiana); Business (MIT); Clinical Research (Mayo Clinic); Biology (Ball State); and Communication (U Penn).

He likes to draw and to paint and especially loves being the dad of his daughter and son.

GIL HEDLEY, PhD

Director, Integral Anatomy Productions, LLC

ABSTRACT

An Introduction to Integral Anatomy

Exploring the principles and import of an integral approach to human anatomy supported with visuals from the laboratory.

BIOGRAPHY

Since 1995, Gil Hedley, Ph.D., has been teaching "integral anatomy" in the dissection laboratory, via keynotes and speaking tours, online via his extensive website and membership portal, www.gilhedley.com and via his YouTube channel, "Somanaut." He is the producer of The Integral Anatomy Series, the Anatomy from A to Z Project, and The Nerve Project, as well as being the author of several books. He is based at the Institute for Anatomical Research in Colorado Springs, CO, where he teaches, films, and serves as Board President.

ARTHUR M. KRIEG, MD

Adjunct Professor, UMass Chan Medical School RNA Therapeutics Institute. Founder and CEO, Zola Therapeutics

ABSTRACT

The Three Flavors of Danger

To survive as a species, all organisms must protect their genome integrity from invaders. Several billion years ago, archaebacteria evolved selective defenses such as CRISPR-Cas to specifically cut DNA sequences in invading bacteriophage. Multicellular eukaryotes like us needed to evolve new defenses to protect our genome integrity against intracellular infections such as retroviruses, to defend against extracellular infections (e.g., bacteria, fungi); and to recognize and repair sterile tissue damage (e.g. trauma). To differentiate these three broad categories of "danger", we evolved an innate immune system that uses several families of "pattern recognition receptors" to "taste" their environment for the presence of molecules that are associated with these three fundamental flavors of danger: i) intracellular infections (e.g., retroviruses); ii) extracellular infections (e.g., bacteria, fungi); and iii) sterile tissue damage. Activation of different subsets of pattern recognition receptors in innate immune cells causes the activation of threat-appropriate adaptive immune defenses to eradicate infection and promote homeostasis and tissue healing. Recent discoveries have provided fresh insights into how these systems normally cooperate to keep us healthy, how their failure can lead to autoimmune diseases and to cancer, and how therapeutic manipulation of pattern recognition receptors can be applied to treat disease.

BIOGRAPHY

Arthur M. Krieg, MD has worked in the oligonucleotide field since the 1980s. Art graduated from Haverford College in 1979, received his MD from Washington University in 1983, and completed a residency in Internal Medicine at the University of Minnesota in 1986. He was a Staff Fellow at the NIH in the Arthritis Institute from 1986 to 1991, when he joined the University of Iowa, becoming Professor of Internal Medicine in the Division of Rheumatology. He has had 19 years of patient care experience, although his focus has always been on basic research and teaching. Art discovered the immune stimulatory CpG DNA motif in 1994, which led to a new approach to immunotherapy and vaccine adjuvants. Based on this technology he co-founded Coley Pharmaceutical Group in 1997, discovering and taking four novel oligonucleotides into clinical development, including the anthrax vaccine adjuvant CpG 7909 in AV7909 (NuThrax®).

Art was co-founder, CSO of Coley Pharmaceutical Group from 1997 until its acquisition and incorporation into Pfizer in 2008. He then served as CSO of Pfizer's Oligonucleotide Therapeutics Unit from 2008 to 2011, becoming co-founder and CEO at RaNA Therapeutics from 2011 to 2013, and CSO at Sarepta until July 2014. In 2015, he founded Checkmate Pharmaceuticals to develop novel oligonucleotides for cancer immunotherapy and then served as CSO until its acquisition by Regeneron in 2022. Art co-founded the first antisense journal, *Nucleic Acid Therapeutics*, which he edited for 16 years, and the Oligonucleotide Therapeutics Society, for which he recently served as President. Art is currently an Adjunct Professor in the UMass Chan Medical School RNA Therapeutics Institute and serves on the scientific advisory boards of several companies developing oligonucleotide therapeutics. He has published more than 250 scientific papers (h-index = 131) and is an inventor on >50 issued US patents covering oligonucleotide technologies.

NELSON TRUJILLO, MD

Cardiologist at Boulder Community Health

ABSTRACT

Contemporary Prevention of Major Cardiovascular Events, An Existential Crisis

A discussion focusing on tools for coronary artery disease screening, risk stratification, and treatment including novel use of proteomics in preventing cardiac vascular events.

BIOGRAPHY

Board certified in cardiovascular medicine, nuclear medicine and internal medicine, Dr. Trujillo is a 1988 graduate of George Washington University School of Medicine in Washington, DC. He did his undergraduate work at Tulane University in New Orleans, Louisiana, earning a bachelor's degree of science and engineering in 1984.

After medical school, Dr. Trujillo spent much of the 1990s at the University of Colorado Health Sciences Center in Denver where he completed his residency in internal medicine as well as fellowships in cardiology and nuclear medicine. He has been in private practice in interventional cardiology at Boulder Heart since 1998.

JIM TRIMMER, PhD

Distinguished Professor Emeritus, University of California, Davis. Founder, UC Davis/NIH NeuroMab Facility

ABSTRACT

Open-source Antibodies as a Path to Enhanced Research Reproducibility and Transparency

I will use my talk to champion the adoption of open-source antibodies to enhance reproducibility and transparency in biomedical research. We have established a pipeline for democratizing antibody availability through open-source antibodies, drawing a parallel to the benefits of open-source software. This entails not only making the ready-to-use antibodies available to the research community but also providing the material (plasmid or cell line) for end users to produce the antibodies themselves at low cost, and by supplying their code (i.e., the antibody sequences) for researchers to verify the identity of these critical research reagents, as well as customize them to meet their own research needs.

By making computer code widely available to the user community, open-source software has greatly expanded the informed use and subsequent improvement of software, resulting in higher quality, increased security, and greater customization for end users, and being cost-effective due to its free access. We hope to achieve the same with open-source antibodies. We urge the biomedical research community to not only utilize the resources we have established, but to continue funding and supporting open-source antibody initiatives. We also encourage researchers who have developed antibodies and other binders to contribute them to these efforts, shifting access to these valuable research reagents towards an open-source model.

BIOGRAPHY

As neuroscience enters the post-genomic era, a major goal is the translation of genomic sequence information into a molecular understanding of the mechanisms of neuronal information processing and transfer. Trimmer's laboratory research focuses on protein function, biochemical pathways and networks of protein-protein interactions regulating intra- and inter-cellular signaling in mammalian neurons. In particular, we are interested in signaling complexes organized by voltage-sensitive ion channels. Ion channels determine the intrinsic electrical properties of neurons and how these cells respond to external stimuli, integrate the encoded information and generate an appropriate response. Modern proteomic techniques have allowed for insights into protein networks organized by ion channels that convert complex information encoded in electrical signals into biochemical signals universally recognized within the neuron.

Our studies are aimed at a molecular understanding of how neuronal ion channels generate and maintain the fidelity of neuronal signaling, and how these processes can be dynamically regulated to generate neuronal plasticity. Such information is necessary for an increased understanding of not only the normal functional plasticity of neurons, but also in understanding of disease states where neuronal function is altered and effects of acute external insults such as ischemia and drugs of abuse, and represent a key step towards the development of therapeutics that can address these and other psychiatric and neurological disorders. Moreover, these studies are representative of approaches that would prove advantageous to studies on other neuronal signaling proteins. To better translate findings from genome-based studies, we have also established the UC Davis/NIH NeuroMab facility, to use information on proteins encoded in the human and other genomes to generate renewable and recombinant monoclonal antibodies and make them available in an open source manner to the research community.

SCHEDULE DAY ONE

SESSION 2: FROM MOLECULES TO PUBLIC HEALTH

Moderator: Wendy Sue Swanson

2:00 – 2:45 PM **Mike Mehan**
Multiomics at Illumina: Sequencing Beyond the Genome

2:45 – 3:30 PM **Nebojsa Janjic**
Targeting of Bad Bugs in the Gut May Have Many Health Benefits

3:30 – 4:00 PM **Break**

4:00 – 4:45 PM **Jay Wellons**
Neurosurgical Public Health: What the Heck Is That

4:45 – 5:30 PM **Sandeep Patel**
Covid-19, the Unlikely Architect of Public Health's Future

DAY ONE

MODERATOR SESSION TWO

WENDY SUE SWANSON, MD

Pediatrician, Founder & CEO, Adjunct Professor

Dr. Wendy Sue Swanson is a pediatrician, physician executive, digital health expert, and bioethicist. She is the founder of two companies: Skin Metal and Wild Health Media. An Adjunct Professor at Stanford University and public health communicator, she is an experienced executive and national public health spokesperson. She has worked in the hospital, community pediatrics, with start-ups, for media, and on behalf of numerous Dept. of Health and US national academies. She is focused on disrupting health communication to increase community understanding via democratizing health advice, health information, and transforming the practice of medicine. She is building companies and partnering with others on efforts that improve public health and opportunities for prevention.

As a pediatrician, author, and a prominent advocate of evidence-based medicine and prevention, she has been a leading voice in health care, working to revolutionize health communications by using social and digital media, as well as mass media, to bridge the gap between parents and doctors. She practiced primary care pediatrics for 12 years. For 10 years Dr. Swanson wrote the first US hospital blog, *Seattle Mama Doc* for Seattle Children's Hospital and founded the Digital Health department in 2013, later named Chief of Digital Innovation leading a team in innovation inside the hospital testing and creating new digital tools. She spent six years as Chief Medical Officer for a start-up company building solutions to prevent pediatric food allergies. Before her career in medicine she was a middle school science teacher in Oakland, CA with Teach for America.

Swanson is a mom of two boys and lives in Madison, WI. She studied psychology (Kenyon College), medicine and bioethics (University of Pennsylvania Perelman School of Medicine), and completed her residency in pediatrics (University of Washington).

MIKE MEHAN, PhD

Associate Director of Bioinformatics at Illumina

ABSTRACT

Multiomics at Illumina: Sequencing Beyond the Genome

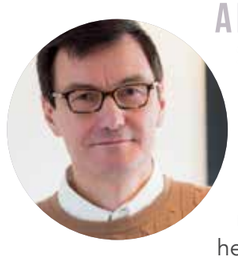
Illumina's mission to unlock the power of the human genome has led to the development of genome sequencers that have transformed clinical diagnostics and biomedical research. Illumina is building on that vision by extending the use of their sequencing instruments beyond traditional genomics with a portfolio of multiomics products spanning epigenetics, transcriptomics, and proteomics. These end-to-end multiomics products will enable researchers and clinicians to integrate diverse biological data streams, offering unprecedented insights into disease mechanisms and paving the way for more precise diagnostics and targeted therapeutic strategies.

BIOGRAPHY

Mike Mehan leads the Multiomics Bioinformatics group at Illumina, driving innovations in epigenomics, transcriptomics, and proteomics. Illumina is a global leader in next-generation sequencing and enables researchers and clinicians to gain deeper insights from genomics data. Mike contributes to Illumina's mission of transforming human health by working with his team to develop algorithms and software for Illumina's portfolio of multiomics products. This new multiomics direction in sequencing combines diverse biological data to deliver a complete view of complex systems, unlocking new potential in disease diagnosis, customized therapies, and personalized medicine.

NEBOJSA JANJIC, PhD

Co-Founder, CEO and President, Crestone, Inc.



ABSTRACT

Selective Targeting of Bad Bugs in the Gut May Have Many Health Benefits

We live among microbes that preceded us on Earth by a few billion years. As new kids on the block, we are hosts to more than thirty trillion bacterial organisms per person, not far from the total number of cells in the human body. Most commensal bacteria reside in our intestines where they are not only benign but also do useful things like help extract nutrients from food and protect us against pathogens. When these complex communities are disrupted by external perturbations such as exposure to broad-spectrum antibiotics or radiation treatment, health problems arise. One well-known condition where dysbiosis leads to overgrowth of toxin-producing bacteria is *C. difficile* infection, an often-lethal disease of the colon caused by an unquestionably bad bug. Gut dysbiosis can also cause distal health problems, including some neurological conditions, through what is known as the gut-brain axis. Restoring healthy gut microbiome by highly selective targeting of pathogenic bacteria may remedy multiple conditions where microbial toxins and metabolites contribute to pathology. Promoting robust, symbiotic microbiome diversity turns out to be good not just for bacterial gut communities but also, through maintenance of colonization resistance, for their evolutionarily much younger hosts.

BIOGRAPHY

Nebojsa Janjic, Ph.D., is a co-founder, CEO and President of Crestone, Inc. Dr. Janjic has been involved with Boulder-based biotechnology companies throughout his professional career, beginning with NeXagen/NeXstar, the original aptamer company he joined at its inception in 1992 where he was responsible for creating a pipeline of drug candidates, which now include two FDA-approved aptamer-based drugs. His contributions included the discovery, preclinical development and early clinical development of Macugen, a first-in-class treatment for wet macular degeneration. Macugen, which received FDA approval in 2004, was named Innovative Pharmaceutical Product of the Year in 2005 and recognized by Nature Reviews Drug Discovery in 2013 as one of the most transformative drug classes of the prior 25 years.

After NeXstar merged with Gilead, Dr. Janjic co-founded Replidyne in 2000, a company focused on discovery and development of small-molecule antibacterial agents with novel mechanism of action. Initially a discovery-stage company, Replidyne built a pipeline of drug candidates across all stages of pre-clinical and clinical development through a combination of internal R&D and licensing. After Replidyne merged in 2008 with a medical device company uninterested in pharmaceuticals, he co-founded Crestone in 2009 to continue the development of antibacterial programs. Concurrently with the founding of Crestone, he joined SomaLogic, a company focused on proteomics, aptamer-based life sciences products and drug candidates, where he served as CSO through 2024.

Dr. Janjic received his B.S. degree in Molecular Biology and Ph.D. in Physical Organic Chemistry from the University of Washington in Seattle and completed his postdoctoral training at the Scripps Research Institute in La Jolla as a Cancer Research Institute Fellow.

JAY WELLONS, MD, MSPH

Cal Turner Chair and Chief of Pediatric Neurosurgery, Professor of Neurosurgery, Pediatrics, Plastic Surgery, and Radiology,
Vice Chair, Department of Neurologic Surgery, Vanderbilt University Medical Center/Monroe Carell Jr. Children's Hospital

ABSTRACT

Neurosurgical Public Health: What the Heck Is That?

This session will focus on the critical role of public health in society as well as specific to the field of pediatric neurosurgery. Firearm injury represents the #1 means of death for our nation's children. The effect on survivors is lifelong. The experience of waiting in the pediatric emergency department after a school shooting only to find that none of the victims survived has had an indelible effect on the speaker. The lecture will focus on his journey from pediatric neurosurgeon of 30 years, to narrative medicine writer, to firearm safety and public health advocate, including his steps and missteps along the way.

BIOGRAPHY

Jay Wellons MD, MSPH holds the Cal Turner Chair of Pediatric Neurosurgery and is the Chief of the Division of Pediatric Neurosurgery and Vice Chair of the Department of Neurosurgery at Vanderbilt University Medical Center (VUMC). He is a Professor in the Departments of Neurological Surgery, Pediatrics, Plastic Surgery, and Radiology. He currently serves as President of the American Society of Pediatric Neurosurgeons and has served as Co-Chair of the editorial board of the *Journal of Neurosurgery-Pediatrics* and chaired the AANS/CNS Section on Pediatric Neurosurgery Annual Meeting that took place in Nashville in 2018.

Dr. Wellons received a B.A. in English from the University of Mississippi in 1991, his medical degree from the University of Mississippi Medical School in 1995, and completed his residency in neurologic surgery at Duke University Medical Center in 2001. This was followed by a one-year fellowship in pediatric neurosurgery at the University of Alabama-Birmingham. He remained on faculty at UAB for a total of 10 years, obtaining an MSPH during that time, then came to Vanderbilt in September of 2012.

He has participated as a site investigator in two multi-institutional research networks centered on pediatric hydrocephalus and Chiari malformation surgical and patient-centered outcomes. While his past areas of interest include surgery for brain tumors, blood vessel malformations of the brain, and craniosynostosis, his current focus is on the surgical management of the Chiari Malformations, congenital neurosurgery, intrauterine neurosurgery, and lesions of the brachial plexus. He founded SOCKS (the Surgical Outcomes Center for Kids) at Vanderbilt in 2015 and served as the Medical Director until 2022. He also served as the VUMC Section of Surgical Sciences Vice Chair of Clinical Research from 2018-2022.

Dr. Wellons served as Program Director for the Neurosurgery Residency Training Program at Vanderbilt from 2014-2018 and was awarded the Robert S. McCleery Master Teacher Award for surgical resident education across all surgical disciplines by the Section of Surgical Sciences in 2022.

In addition to over 250 scientific publications, he has been a contributor to the *New York Times Sunday Review*, *TIME*, *Garden and Gun Magazine*, *Fresh Air: NPR, and OprahDaily.com*. His book *All That Moves Us: A Pediatric Neurosurgeon, His Young Patients, and Their Stories of Grace and Resilience* with publisher Penguin Random House debuted in June of 2022 and was named one of the top books of 2022 by *The New Yorker* and garnered a starred review by *Publishers Weekly*. His non-scientific writing focuses specifically on his specialty of pediatric neurosurgery, but also the broader field of medicine and the profound lessons learned from the children and parents that he has cared for over the last 30 years.

SANDEEP PATEL, PhD

Director of BARDA's Division of Research, Innovation, and Ventures (DRIVe)

ABSTRACT

COVID-19, the Unlikely Architect of Public Health's Future

There is a near-certain probability that we will face another COVID-like event. The challenge is that we can't predict exactly what will come next. Drawing from his experience leading BARDA DRIVe, a newly formed U.S. government biosecurity unit, Sandeep will share key lessons from his experience in the pandemic response on how we can better prepare for a future "Threat X," and how those same lessons have shaped his current work aimed at redesigning public health to be more durable, resilient, and effective at enhancing humanity's health.

BIOGRAPHY

Sandeep was the inaugural Director of BARDA's Division of Research, Innovation, and Ventures (DRIVe), within the U.S. Dept. of Health & Human Services (HHS), where he built and led a team that managed over $700M in funding in translational sciences and early stage companies to protect against global health security threats. Previously, Sandeep served in the Immediate Office of the HHS Secretary, where he founded KidneyX, a public-private partnership that catalyzed the development of breakthrough therapies for kidney disease and spearheaded the Presidential Advancing American Kidney Health Initiative, aimed at reforming the nation's organ transplant system, getting more patients off dialysis, and increasing focus to prevent kidney failure. Prior to that he was a scientific analyst for Thomson Reuters, scientist for an SBIR-backed startup, and a Mirzayan Science and Technology Policy Fellow at the National Academy of Sciences.

SCHEDULE DAY TWO

SESSION 3 : COMPUTATION AND THE QUILT

Moderator: Nicholas Tatonetti

9:05 – 9:50 AM **Dean Noble-Tolla**
Powering Proactive Healthcare: Leveraging AI to Reshape Our Healthcare System

9:50– 10:35 AM **Hansilla Alaigh**
The Intelligence Revolution: Building WISE-R's Living Platform

10:35 – 11:05 AM **Break**

11:05 – 11:50 AM **James Fraser**
The AVOID-OME: Speeding Drug Discovery by Unlocking Machine Learning on Anti-Targets

11:50 – 12:35 PM **Noémie Elhadad**
Human-Centered AI Approaches to Endometriosis Detection and Management

12:35 – 2:00 PM **Lunch**

DAY TWO

MODERATOR SESSION THREE

NICHOLAS TATONETTI, PhD

Vice Chair of Operations in the Department of Computational Biomedicine and Associate Director of Computational Oncology in the Cancer Center at Cedars-Sinai Medical Center

Nicholas Tatonetti is Vice Chair of Operations in the Department of Computational Biomedicine and Associate Director of Computational Oncology in the Cancer Center at Cedars-Sinai Medical Center. He earned his PhD from Stanford University, where he specialized in developing statistical and computational methods for mining observational data. Over the last 14 years, he has applied these methods to drug safety surveillance, identifying previously unknown serious drug-drug interactions, and discovering dangerous adverse drug effects.

At Cedars-Sinai, Tatonetti's lab uses massive-scale real clinical and molecular data to make robust and validated scientific discoveries, with a specific focus on detecting, explaining, and validating drug effects and drug interactions. He has published over 180 peer-reviewed scientific publications in medicine, systems biology, machine learning, and bioinformatics. He is passionate about integrating real-world data, such as electronic health records, and high-dimensional biological data captured using next-generation sequencing, high-throughput screening, and other "omics" technologies, to reimagine and rescale the scientific method.

DEAN NOBLE-TOLLA, PhD

Chief Product & Analytics Officer, Prealize Health

ABSTRACT

Powering Proactive Healthcare: Leveraging AI to Reshape Our Healthcare System

Many of us know that AI has tremendous potential to change healthcare. But we are still far from leveraging its full potential. This talk presents a new model, MetisAI. MetisAI leverages large datasets to accurately find millions of patients at risk of adverse health events. This allows timely medical interventions that reduce costs while improving lives.

MetisAI is a transformer model capable of producing a wide spectrum of individual-level predictions that address clinical risk, healthcare cost, and even the timing of future clinical events. Historically, these predictive capabilities would require building dozens of separate models. By leveraging the latest research into transformer models, we have built a single foundation model that understands events in healthcare timelines at the individual level. Our model's predictions go beyond the typical risk score. MetisAI is able to provide straightforward predictions both of the likelihood of a medical event and its timing. For example, we predict who will end up in the emergency department, which conditions will drive them to seek care (e.g., anxiety, depression, heart failure, etc.), and when they will end up there (e.g., in the next 7-9 months). These predictions allow health systems and health plans to take preventative action.

MetisAI has already been successfully integrated into existing workflows by healthcare providers and health plans to surface rising-risk members for proactive intervention. The talk will review results from some of these real-world case studies. Attendees will come away with an understanding of how AI foundation models are not just theoretical innovations but practical tools actively reshaping healthcare delivery.

BIOGRAPHY

Dean Noble-Tolla is the Chief Product & Analytics Officer at Prealize Health where he oversees the development of the most advanced AI model in healthcare. Over the past 15 years, he has worked with health plans and healthcare providers to translate complex data into transformative strategies, scalable technologies, and measurable growth. His expertise in data science and healthcare analytics has fueled the creation of predictive models, data pipelines, and robust analytics across a wide range of organizations including regional, Blues, and national health plans. This breadth of experience has granted him a rare, comprehensive perspective on the intricacies of how data drives care and business models throughout the U.S. healthcare system.

At Prealize Health, Dean spearheaded the launch of a groundbreaking AI foundation model that not only identifies who is rising in risk, but also predicts when that risk will occur and pinpoints the clinical drivers behind it. His prior work includes building predictive solutions that uncovered millions in annual medical waste, automated care authorization, optimized wound care triage, and enabled proactive palliative care referrals. Before transitioning into healthcare, he conducted research in aging, life expectancy, systems biology, and synthetic biology. He holds a B.S. in Mathematics from the University of Georgia and a Ph.D. in Biomedical Engineering from the University of California, Davis.

HANSILLA ALAIGH

Founder & Chief Executive Officer, Global Action Alliance

ABSTRACT

The Intelligence Revolution: Building WISE-R's Living Platform

This presentation reveals the transformative journey of WISE-R, born from a critical realization: in today's data-rich world, organizations are drowning in information yet starving for true intelligence. Despite investing millions in data and AI, organizations around the world consistently miss the strategic opportunities that define their future. This paradox drove the creation of WISE-R's revolutionary living intelligence platform.

Through compelling examples and breakthrough moments, we explore how WISE-R evolved from concept to reality, challenging conventional wisdom about what's possible in strategic intelligence. The discussion showcases how our unique approach transforms fragmented data into clear strategic advantage, revealing patterns that others miss and predicting opportunities before they emerge. We demonstrate how WISE-R's living intelligence platform has already begun reshaping how organizations understand and act on strategic opportunities, driving decisions that separate market leaders from followers. The presentation concludes with our bold vision for the future of intelligence and WISE-R's role in empowering organizations to not just see tomorrow but shape it.

BIOGRAPHY

Hansilla Alaigh is the Founder and CEO of Global Action Alliance, an AI tech company pioneering the next generation of strategic intelligence. With 14+ years in biotech and pharma leadership, she drives R&D strategy and stakeholder management across medical devices, vaccines, and therapeutics, collaborating with government and non-government agencies globally. Her expertise spans from target identification through commercialization in biotech, large pharma, and non-profits. Hansilla holds a B.S. in Biochemistry and Neuroscience from the University of Surrey, attended Harvard Medical School, earned an M.S. in Systems Engineering from Cornell University.

JAMES FRASER, PhD

Chair and Ernest L. Prien Professor, Department of Bioengineering & Therapeutic Sciences, University of California

ABSTRACT

The AVOID-OME: Speeding Drug Discovery by Unlocking Machine Learning on Anti-Targets

Small molecule therapies represent a significant portion of FDA-approved drugs, yet their development is often hindered by the challenge of balancing on-target activity with desirable pharmacokinetic (PK) properties. Pharmacokinetic properties, which encompass absorption, distribution, metabolism, and excretion (ADME), determine a drug's fate within the body and are crucial for its efficacy and safety. Currently, the optimization of these properties is often addressed late in the pre-clinical drug discovery process, leading to costly failures. We are working to overcome this limitation by proactively characterizing the chemical space accessible to ADMET-associated proteins ("anti-targets"). By applying recent advances in experimental and computational structural biology, a comprehensive open library of experimental and structural datasets are being generated. This precompetitive resource will provide valuable insights into the binding properties of "anti-targets" and empower researchers to develop predictive AI models for pharmacokinetic optimization. This shift towards a more proactive and data-driven approach could streamline lead optimization, mitigate late-stage attrition, and ultimately accelerate the delivery of new therapies to patients.

BIOGRAPHY

James Fraser studied Biology as an undergraduate at McGill University. His Ph.D. work at UC Berkeley under Dr. Tom Alber focused on the relationship between protein conformational dynamics and enzymatic catalysis. He moved to UCSF to start his lab in 2011. Currently, Professor Fraser is Chair of the Department of Bioengineering and Therapeutic Sciences. His lab's work spans across various disciplines, including structural biology, deep mutational scanning, and drug discovery. He is also known for his commitment to open science and served on the board of ASAPbio for many years.

NOÉMIE ELHADAD, PhD

Associate Professor & Chair of the Department of Biomedical Informatics, Columbia University

ABSTRACT

Human-Centered AI Approaches to Endometriosis Detection and Management

Endometriosis affects an estimated 6–10% of women of reproductive age, yet it remains underdiagnosed, under-researched, and poorly understood. This talk presents human-centered AI approaches to improve the detection and management of endometriosis, leveraging patient-generated data and large-scale observational health records. By integrating AI-driven phenotyping, predictive modeling, and real-world patient insights, this work aims to advance early detection and empower individuals with endometriosis in their care journey.

BIOGRAPHY

Noémie Elhadad is an Associate Professor and Chair of the Department of Biomedical Informatics at Columbia University. Her research sits at the intersection of artificial intelligence, human-centered computing, and medicine, with a focus on developing novel machine-learning methods. She designs AI-driven tools to support patients and clinicians, ensuring that the AI systems of the future are safe, effective, and advance medicine.

SCHEDULE DAY TWO

SESSION 4 : WEAVING THE QUILT

Moderator: Duey Freeman

2:00 – 2:45 PM **Krystal Tsosie**
Indigenous Health Through DNA and Data Futures

2:45 – 3:30 PM **Taylor White Moffitt**
Self Compassion Delivers Everything
Self Improvement Promised

3:30 – 4:00 PM **Break**

4:00 – 4:45 PM **Joshua Rothman**
AI and Human Values

4:45 PM – 5:30 PM **Chris Janjic & Brandon Smith**
Beyond Firebreak: Mental Health and Reentry for Incarcerated Firefighters

DAY TWO

MODERATOR SESSION FOUR

DUEY FREEMAN

Licensed Therapist

Duey Freeman is a sought-after teacher, trainer, licensed therapist, and equine professional worldwide. He has taught worldwide and developed a practical attachment theory and human development theory taught to thousands of university students. He has nearly 80,000 direct client hours and co-founded the Gestalt Equine Institute and the Gestalt Institute of the Rockies. He supervises therapists and graduate students and does business and land consultations for new equine therapy sites.

Duey embodies both tenderness and strength in all his relations and work. His quality of contact and relationship with others is authentic and unique. People come from around the world to study with him. He is a true elder and mentor, exploring new horizons in facilitating men's growth work. Gestalt and Relational Horsemanship are not just approaches to Duey; they are how he walks through the world.

KRYSTAL TSOSIE, PhD, MPH, MA

Indigenous Geneticist-Bioethicist & Assistant Professor, School of Life Sciences at Arizona State University

ABSTRACT

Indigenous Health Through DNA and Data Futures

Traditionally, the innovation pathway as it relates to genomic data derived from Tribal Nations and their members has been largely one-sided. Genomic and health data have often been collected from Indigenous peoples via recruitment in large-scale genomic diversity projects and clinical testing with the promise that derived benefits of such research would ameliorate disparities in health outcomes. However, the promises of genomics medicine have yet to materialize in chronically medically underserved Tribal communities. Yet, the interest in recruiting Indigenous peoples in genomics research persists amid researcher interests to understand the breadth of human genomic variation. Additionally, industry and academia disproportionately stand to benefit from variant discovery and variant-specific therapeutics which have potential commercial utility. There is an impending collision between Tribal data sovereignty and non-Tribal interests in the space of healthcare delivery and ownership/stewardship of genomic data from Tribal members. We discuss how emerging technologies as rooted in Tribally-led data repositories, machine learning approaches, and shifts in Tribal laws and resolutions may shift status quo innovation pathways to enable Tribal, tech-centered data futures rooted in genomic and health data.

BIOGRAPHY

A member of the Navajo Nation, she cofounded the Native BioData Consortium. Today, Tsosie leads the Tsosie Lab for Indigenous Genomic Data Equity and Justice at ASU. One lab project involves working with Tribal partners in the Phoenix area to create a multiethnic cohort for genomic and nongenomic data. The data, which will include social, structural, cultural and traditional factors, could provide a more complex picture of health disparities and what causes them, as well as a more nuanced understanding of Indigenous identity and health.

TAYLOR WHITE MOFFITT

Founder, Humanity Shared

ABSTRACT

Self Compassion Delivers Everything Self Improvement Promised

The messages we receive from the external world on a moment to moment basis often give us the feedback that we need to be doing more, and that what we are doing needs to be better. It is no wonder that our internal dialogue follows the same narrative. Consequently, we feel at our core that we are not loveable, not worthy, not deserving, and ultimately, not being enough. Our way of being becomes one of great self-aggression and avoidance. Self compassion is the warmth, love, and acceptance we choose to offer ourselves while we are in pain, teaching us to tend to ourselves regardless of the circumstances. It asks us to create a practice of turning toward our difficulties, and ultimately ourselves, with non judgement and compassion. Through self compassion we learn to meet ourselves and our lives with kindness instead of judgment, connection and community instead of isolation, and mindfulness or intention instead of being lost in thought or hyper analysis of our problems.

BIOGRAPHY

For 30+ years, Taylor White Moffitt has worked with individuals, couples and groups guiding them to increased self awareness and self care with skills that create lasting change. Taylor believes and has shown that these practices give us what we need to be more empowered and service-centered, as opposed to our societal default of often being self absorbed and unintentional. In learning how to become the center of your universe in the most generous of ways, you become a human who tends to themselves with radical self care. This allows you to participate in life as your most authentic self, inspiring the creativity, productivity, clarity and ease you expected from self improvement.

JOSHUA ROTHMAN

Staff Writer, *The New Yorker*

ABSTRACT

AI and Human Values

The advent of artificial intelligence challenges us to look at ourselves and articulate our own uniqueness. What separates human thinking from artificial thinking? Human experience from artificial experience? At a time when, for both practical and ideological reasons, the artificial is going to be elevated over the human, we need to understand the value in the human version of things. We have the tools to pinpoint our own value -- they've been built by philosophers, scientists, and even theologians -- but we need to repurpose them for our present moment.

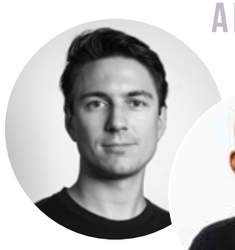
BIOGRAPHY

Joshua Rothman is a staff writer at *The New Yorker.* He writes Open Questions, a weekly column about intellectual life, as well as profiles of thinkers in various disciplines. Previously, he was the magazine's ideas editor.

CHRIS JANJIC AND BRANDON N. SMITH

Cinematographer

Co-Founder & Senior Advisor to Executive Leadership at Forestry & Fire Recruitment Program



ABSTRACT

Beyond Firebreak: Mental Health and Reentry for Incarcerated Firefighters

Since World War II, several states have relied on incarcerated individuals to fight wildfires, providing them with the same high-level training as state-certified wildland firefighters. For many, this work offers a rare sense of freedom—access to open air, better meals, new skills, and a break from confinement. Yet, despite the dangers, incarcerated firefighters earn as little as a few dollars per day, rarely exceeding $15. Many credit the camaraderie and sense of purpose they found in these programs as key to their reintegration into society.

However, upon release, these individuals face steep barriers to pursuing firefighting careers, including legal restrictions, lack of access to resources, and systemic discrimination. Meanwhile, wildfire seasons grow longer and more intense, and the West faces a severe firefighter shortage.

Firebreak is a feature documentary following Brandon Smith and Royal Ramey, who met fighting fires while incarcerated. Now, despite institutional and financial obstacles, they train formerly incarcerated firefighters to join their self-owned department.

In this discussion, *Firebreak* cinematographer Chris Janjic joins Brandon Smith to explore how incarcerated wildland firefighting intersects with mental health, social justice, and reentry. Through conversation and selected film clips, they offer insight into the systemic challenges of turning second chances into lasting careers.

BIOGRAPHY

Chris Janjic is a cinematographer specializing in non-fiction storytelling. Based in Portland, OR, he has filmed in over 15 countries across 5 continents. His work has been recognized by the National Daytime Emmy, Northwest Regional Emmy, AIB, Communicator, Telly, W3, and Webby Awards. He holds a B.S. in Photojournalism from Syracuse University.

Brandon N. Smith is the Co-Founder and Senior Advisor to Executive Leadership at FFRP. Through this role, Smith works closely with the CEO and Leadership Team to provide guidance on the organization's strategic direction in order to maximize the impact and mission of FFRP.

SPONSORED BY

We'd like to thank all the generous sponsors and donors over the past 15 years. We are grateful for your support.

STANDARD BIOTOOLS™

INDIVIDUAL DONORS

Ramesh Akkina
Richard Barker
Hannah Biegel
Ben Binder
Trisha Brockman
Sarah Burgamy
Bob Burgin
Gil Campbell
Marsha and Michael Caplan
Kate Carbone
Jeff Carter
Nancy Cifelli
A J Cohen
Isaac Davenport
Chip Davis
Jenny Devaud
Poñly Donald
Sandra Ebling
JoAnne Engebrecht
Catherine Fowler
Joe Gogain
Ron Goldfarb
Anne Gooding
Lieschen Hartman
Tom Hast
Robert Hastings
John Heumann
Brian Hicke
Margaret Johnson
Michele Jones
Joseph Kates
Stephan Kraemer
Thomas Kuehn
Scott Lett
Jim Linder
Kristin Lindquist
Chris Lunt
Mark Lupa
Tony Marion
Daniel McDonald
Steven Mermelstein
Adina Michael-Titus
John Moran
Guinevere Murphy
Phil Nugent
Cheryl Olivo-Neil
Joni Parman Parman
Shelley Payne
David Porciani
Sally Powell-Ashby
Brian Reasor
Kevin Reichlin
Karen Riley
John Robson
Lauren Rosenberg
Alex Scalia
Ted Scambos
Mark Schwartz
Britta Singer
Ajit Singh
Gary Stormo
Graham Swanson
Nicholas Tatonetti
David Tippit
Jim Trimmer
Lex Van der Ploeg
Rana Verret
Iwao Waga
Sara Weil
Jack Wheeler
Joel Wommack

DEDICATION

RICHARD DECKELBAUM

Last year we began the symposium with a morning of research on pain and prospects for treatments for pain. We had four outstanding scientists and clinicians, two of whom came to GLS because Richard invited them. We discussed the complexities of pain management. Our friend Richard helped us plan that session and then Richard offered to come to Boulder to participate as the moderator. We had never done anything quite like that at GLS, and Richard made the session better than it would otherwise have been. I now fully believe in essential fatty acids as a simple molecular biologist.

The symposium was, as usual, in May of 2024, and after GLS Richard and his wonderful wife Kaya returned to New York. Tragically, on October 2, Richard died suddenly and unexpectedly, leaving us wondering how his ideas could continue to be developed, not merely to honor Richard but because his ideas were correct and important. The best part of Richard was his extraordinary breadth of knowledge and feelings – he never wavered from doing right, even when his audience knew so little about the science he understood better than anyone. He was a patient teacher.

Richard did not behave as an elitist in any part of his life. He talked to everyone, he listened to everyone, and he had passion for the fullness of his life. And he cared about so many things beyond lipids and their role in our biology. I was lucky enough to learn from Richard about life in Israel, with all its complexity. Richard was not afraid of complexity; in fact, he believed that when complexity grew exponentially, he would be able to help sort things out.

He was a treasure of a human being who made our lives better.

Larry Gold

SAVE THE DATE

17TH ANNUAL GOLDLAB SYMPOSIUM

May 14-15, 2026

THANK YOU FOR ATTENDING

GoldLab SYMPOSIUM

CONTACT

www.goldlabfoundation.org

GET SOCIAL

- GoldLab Symposium
- @goldlabcolorado
- GoldLab Foundation
- #GLS2025