THE ROCKEFELLER UNIVERSITY HOSPITAL
CENTER FOR CLINICAL AND TRANSLATIONAL SCIENCE

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Center for Clinical and Translational Science
e-Newsletter

Center News

Roger Vaughan, MS, DrPH Receives the Inaugural University of Pennsylvania Institute for Translational Medicine and Therapeutics Education Award for Excellence in Teaching

By Editorial Staff

Dr. Roger Vaughan joined The Rockefeller University in 2017 and is the Director of Biostatistics at Rockefeller University Center for Clinical and Translational Science, a professor at Weill Cornell Graduate School of Medical Sciences, and an Associate Editor at the American Journal of Public Health. He developed an outstanding research- and Clinical Scholar-focused biostatistics course at Rockefeller that takes a "from the driver's seat" and "spherical knowledge" approach, engaging the Scholars in deep discussion of methods in the context of the overall study design, using the extant literature as a vehicle, rather than providing purely didactic statistical presentations. Dr. Vaughan's excellence as a teacher was recognized by Dr. Emma Meagher, a member of the Rockefeller University Clinical and Translational Center External Advisory Board and Professor, Medicine and Pharmacology, Vice Dean and Chief Clinical Research Officer, and Director, Translational Research Education at the University of Pennsylvania, who invited him in the fall of 2020 to give the same course at the University of Pennsylvania via Zoom.

The course was extremely well received and as a result, Dr. Vaughan was awarded the inaugural ITMAT Education Award for Excellence in Teaching from the Institute for Translational Medicine and Therapeutics (ITMAT) at the University of Pennsylvania, Perelman School of Medicine. "Established in 2022, this award recognizes outstanding teaching in translational research, regulatory science, and regulatory affairs. The award aims to recognize instructors who are exceptional, are committed to teaching and learning, and innovative in their approach."

One nominator wrote: "Dr. Vaughan was challenged with teaching a new statistics course to students during the early months of the pandemic. He did a truly outstanding job of developing a Zoom-friendly approach to his course by encouraging small-group work and implementing didactic content."

Jean-Laurent Casanova, MD, PhD Receives 2022 Top Ten Clinical Research Achievement Award

By Editorial Staff

Dr. Jean-Laurent Casanova, Levy Family Professor and Head of the St. Giles Laboratory of Human Genetics of Infectious Diseases was one of the recipients of the 2022 Top Ten Clinical Research Achievement Awards for research on the important role of autoantibodies neutralizing type I IFNs in COVID-19. The research study was honored at the awards gala on April 19, 2022.

Dr. Casanova and a team of researchers published their findings in Science Immunology in August 2021, The important role of autoantibodies neutralizing type I IFNs in COVID-19. "Type I interferons are potent antiviral cytokines induced promptly after human respiratory exposure to SARS-CoV-2 virus. Either genetic or acquired defects in type I interferon signaling can increase host vulnerability to developing severe COVID-19 (coronavirus disease 2019) disease. Bastard et al. used sensitive immunoassays and neutralization testing to detect presence of autoantibodies to α, β, or ω type I interferons in plasma samples from a large cohort of patients with COVID-19 and prepandemic controls. The incidence of neutralizing autoantibodies to type I interferon increased with age in the control cohort, increasing sharply after the age of 70. These findings indicate that autoantibodies targeting type I IFNs represent a not uncommon type of acquired immunodeficiency that contributes to about 20% of all COVID-19 fatalities."

Recognizing the need to celebrate the nation's clinical research accomplishments that involve both innovation and impact on human disease, the Clinical Research Forum conducts an annual competition to determine the ten outstanding research accomplishments in the United States.

These major research advances represent a portion of the annual return on the nation's investment in the health and future welfare of its citizens.

The mission of the Clinical Research Forum is to provide leadership to the national and clinical translational research enterprise and promote understanding and support for clinical research and its impact on health and healthcare

Dr. Sarah Szanton Delivers the 2022 Beatrice Renfield Lectureship in Research Nursing

By Bernadette 'Candy' Capili, PhD, NP-C

The Rockefeller University Center for Clinical and Translational Science (CCTS) and the Heilbrunn Family Center for Research Nursing hosted the 14th Annual Beatrice Renfield Lecture in Research Nursing on March 22, 2022. The lecture was held virtually due to COVID-19 restrictions. Dr. Barry Coller, Physician-in-Chief of the Rockefeller University Hospital, began the event with a short tribute to Ms. Nancy Ellicot, Rockefeller University Hospital's first Superintendent of Nursing, who established the standards for the practice of clinical research nursing and invented several novel devices to improve nursing care. Dr. Bernadette 'Candy' Capili, Director of the Heilbrunn Family Center for Research Nursing, hosted the program and introduced this year's speaker, Sarah Szanton, PhD, MSN, FAAN, ANP. Dr. Szanton is the Patricia M. Davidson Health Equity and Social Justice Endowed Professor and Dean at the Johns Hopkins School of Nursing. In addition, she has an appointment in the Department of Health Policy and Management at the John Hopkins Bloomberg School of Public Health.

Dr. Szanton's presentation, "Health Equity Among Older Adults: Leveraging Strengths," focused on her original research, Community Aging in Place – Advancing Better Living for Elders (CAPABLE) program, which combines handy worker services with nursing and occupational therapy to improve mobility, reduce disability, decrease healthcare costs, and enable older adults to "age in place," and stay out of a nursing home. Dr. Szaton was a 2019 winner of the Heinz Award in the Human Condition category. In addition, she was selected as one of Next Avenue's "Influencers in Aging," a list of remarkable people who are changing how we age and think about aging in America.

Dr. Szanton discussed the CAPABLE program in her presentation, which focuses on treating the whole person by modifying the environment. The CAPABLE approach treats the older adult as the expert, and the clinicians support the older adult's goals to increase physical function, reduce depression, fewer hospital and nursing home admissions. One example Dr. Szanton presented was the case of an older adult who wanted to prepare meals more easily without shortness of breath and pain. In this example, the CAPABLE handy worker lowered cabinets so that the older adult could reach items and organize her spices using less energy. The handy worker also installed an above the stove mirror to view foods in the pots and pans while seated. Dr. Szanton emphasized that the CAPABLE program works because of the person and environment fit. Also, it honors the strength and goals of the person, provides resources to achieve goals, and builds self-efficacy for new challenges.

One hundred and sixty-two guests attended the lecture, including representatives from the Heilbrunn Family, the Beatrice Renfield Foundation, Rockefeller University Hospital Nursing Department members, the CCTS Clinical Research Support Office, Facilitation Office, Regulatory Affairs Group, and members of Rockefeller Laboratories. Also in attendance were four Heilbrunn Nurse Scholars. In addition, Dr. Szanton's presentation was webcast by the Clinical Director's Network (CDN).

Dana Bielopolski, MD, PhD, 3rd Year Clinical Scholar, Delivers Translational Science Conference Oral Presentation

By Editorial Staff

Dr. Dana Bielopolski, 3rd Year Clinical Scholar gave an oral presentation on April 21, 2022, at the Translational Science 2022 conference in Chicago on her research project, Translational Characterization of Blood Pressure Changes Following the DASH Diet – From Nutrition Through Electrolytes to Exosomes.

Hypertension is a disease of the western world, as it stems from lifestyle habits. Lowering salt consumption reduces blood pressure, but a greater reduction, equivalent to the effect of an anti-hypertensive drug can be achieved with the specialized DASH (Dietary Approaches to Stop Hypertension) diet, which is both low in sodium and high in potassium. The precise mechanism through which DASH achieves its effect is not understood. Dr. Bielopolski sought to characterize the early sequence of changes after transitioning from American style nutrition to the DASH diet by measuring aldosterone levels and urine sodium and potassium.

In this single center interventional trial, participants with stage 1 hypertension, were admitted to the Rockefeller University Hospital for 14-days and transitioned from an American style diet to the DASH diet. Data were collected daily for vital signs, blood chemistry, and urine sodium and potassium. Participants completed two 24-hour ambulatory blood pressure monitoring periods on days 1 and10, and in parallel, two 24-hour urine collections.

In her recently accepted Journal of Clinical and Translational Science manuscript, Dr. Bielopolski found that endogenous aldosterone secretion increased after starting on the DASH diet, rising to a peak on day 5 and then decreasing despite continuous exposure, this paralleled changes in the sodium and potassium content in the urine. One practical conclusion from her research is that monitoring both urine sodium and potassium may provide better information on adherence to lifestyle modifications that can reduce blood pressure than just measuring urinary sodium. Thus, a combination of a low sodium and high potassium diet appears to have synergistic effects on blood pressure reduction and cardiovascular health.

Dr. Bielopolski commented on attending the meeting: "This was the first in person conference I attended since the pandemic, and I was inspired by participants' desire to meet and share their science. I find in person interactions irreplaceable as a means to not only communicate and disseminate new knowledge, but also to develop new collaborations."

The International Association of Clinical Research Nurses Annual Conference

By Rita Devine MPA, CRN, Jill McCabe MSN CRN, Regina Butler CRN, Tia Gareau BSN, CRN

Tia Gareau, Jill McCabe,
Rita Divine, and Regina Butler

The thirteenth annual conference of the International Association of Clinical Research Nurses (IACRN) entitled "Trends, Issues & Innovations in Clinical Research Nursing" was held virtually from October 18 - 20, 2021. The Zoom platform allowed for a truly international representation. The current president of IACRN, Jennifer Allison, is the Matron of National Institute for Health Research (NIHR) Southampton Clinical Research Facility and Associate Director of Nursing and Midwifery NHIR. Clinical research nurses from Scotland, Ireland, United Kingdom, Japan, China, Africa and United States participated and presented their work. Four clinical research nurses from Rockefeller University Hospital, Regina Butler, Rita Devine, Tia Gareau, and Jill McCabe attended the conference. With 22 concurrent sessions and 16 roundtable discussions to choose from over the 3-day event, we decided to attend different sessions and then share our information and experiences to maximize the value of our participating to our programs.

Regina Butler: "Having attended 2 previous conferences, it amazes me how each conference has added to my knowledge and appreciation of clinical research nursing. The session 'An Assessment of the Barriers to Clinical Research: Perceptions of the Clinical Research Nurse, Clinical Research Assistant and the Bedside Nurse,' reminded me of daily barriers (real or perceived) and the need to improve the implementation of clinical research and the care of clinical research participants in all settings."

Rita Devine: "The most valuable session I attended was 'The Role of the Clinical Research Nurse in Inclusion, Equity and Justice.' There has long been acknowledgement in clinical research of a lack of diversity of race, gender, education, body type, and age. The bias maybe conscious or unconscious but it exists and must be addressed. Three key strategies offered were: acknowledge gaps in equities; generate a general consensus in defining terms, definitions, and common language; and dialogue to accomplish change. It was encouraging to hear this issue discussed on a global platform."

Tia Gareau: "Attending the 13th annual IACRN conference as a first-time attendee gave me the opportunity to glimpse into the broader global clinical research nurse community. I attended several roundtable discussions. It was encouraging to hear of the ongoing advocacy for limited and non-English speaking research participants. I found enlightening the pharmacokinetic sample collection practices among the global clinical research nursing community. Poster presenters shared creative ways their organizations continued protocols and supported colleagues during the height of the COVID-19 pandemic. My participation this year allowed me to gain a deeper understanding of differing and similar institutional practices and challenges and I look forward to next year's conference."

Jill McCabe: "The most memorable moments of the conference were the two roundtable discussions I attended. The topics 'Issues in Manuscript Writing' and 'Evaluating the Need for CRN-Specific Leadership Assessment Tools,' allowed for an opportunity to gain insight and perspective from IACRN peers. Each of us shared first-hand experiences, and challenges. Many shared several tools

I-Corps Entrepreneurship Training: A Dynamic, Experiential Learning Vehicle Available to The Rockefeller Community

By Bruce R. Conway, PhD

The Rockefeller University is at the forefront of current efforts to translate discoveries made by academic laboratories into effective strategies to prevent and treat disease. The University has a history of active engagement in entrepreneurial education and expansion of the innovation ecosystem. During the last ten years, the University has built a robust translational research pipeline to support these efforts, helping to ensure that its scientists can explore potential medical applications of their discoveries. To achieve these goals, several critical elements have been put in place to foster translational activities and technology development from the Rockefeller laboratories.

I-Corps Training

Rockefeller University has embraced evidence-based entrepreneurial training and the experiential learning methodology of the I-Corps program. I-Corps training prepares scientists to extend their focus beyond the university laboratory and accelerates the economic and societal benefits of basic-research projects that are ready to move toward the marketplace.

In 2016, Rockefeller received a CTSA administrative supplement to participate in a 'train-the-trainer' I-Corps program hosted by the National Center for Advancing Translational Science (NCATS) and the National Science Foundation (NSF). This project was immensely successful and revealed a need to adapt the I-Corps methodology for clinical researchers. Rockefeller University, along with eight other CTSA hubs, was awarded a second administrative supplement to develop a rigorous and scalable curriculum (I-Corps@NCATS) to assist with translation of discoveries into successful products that improve human health. Participating teams reported increased readiness for commercialization through enhanced understanding of customer needs obtained from the I-Corps@NCATS programming.

In early 2022, Rockefeller University was one of five affiliated schools that partnered with CUNY, Columbia, and NYU to receive a National Science Foundation Grant to form a highly collaborative I-Corps hub to serve the Northeast U.S. https://www.nsf.gov/news/special_reports/i-corps/hubs.jsp The NYC Regional Innovation Network (NYCRIN) hub will provide innovation infrastructure, training, and research for

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2020 Heilbrunn Nurse Scholar, Dr. Lacey Heinsberg, Receives Research Awards

By Bernadette 'Candy' Capili, PhD, NP-C

Dr. Lacey W. Heinsberg, PhD, RN, a Postdoctoral Scholar of Human Genetics at the University of Pittsburgh and a 2020 Heilbrunn Nurse Scholar, has received a Loan Repayment Program (LRP) Award from the National Institute of Environmental Health Sciences and the Global Nursing Research Award from Sigma, a nursing honors society.

Dr. Heinsberg's research focuses broadly on the underpinnings of chronic conditions, recovery from illness, and wellness of communities through omic-based approaches. In addition, she has a particular interest in understanding how rising levels of obesity impact maternal and child health, with a specific focus on reducing the intergenerational transmission of chronic disease.

Dr. Heinsberg's LRP will build upon her Heilbrunn-funded research to study per- and poly-fluoroalkyl exposure substance (PFAS) in infants from the nation of Samoa, with a specific focus on early life body composition. Through this project, Dr. Heinsberg is not only characterizing PFAS levels in cord blood collected at birth and dried blood spots collected over the first two years of life, but she is also using temporal untargeted metabolomics in parallel to understand human response to these exposures better.

The Sigma Global Nursing Research grant will also support her research in Samoa. It provides $10,000 to a nurse-led cross-country research team that focuses on responding to health disparities globally. Dr. Heinsberg and Co-PI, Dr. Ulai Tapa Fidow, are studying growth and body composition in children from Samoa. Their work focuses explicitly on a genetic variant in CREB3 Regulator Factor (CREBRF) that confers risk for obesity but protection against diabetes in the Pacific Islander population.

Lucy Apicello, New Recruitment Specialist in the Clinical Research Support Office

By Editorial Board

Ms. Lucy Apicello joined the Clinical Research Support Office in January 2022 as the Center for Clinical Translational Science Recruitment Specialist.

Lucy received her Bachelor of Art in Speech and Theater from City of New York Herbert H. Lehman College. Lucy is a longtime employee of Rockefeller University, having spent 17 years as Guest Housing Coordinator in the Rockefeller University Housing Department, before joining the laboratory of the late Dr. Bruce S. McEwen as lab administrator, where she worked for 4 years.

Lucy will conduct comprehensive recruitment consultations, often as part of Protocol Navigation, to help optimize protocol design to enhance recruitment feasibility and achieve timely enrollment. She will work in concert with investigators, the Community Engagement Specialist Anuradha Hashemi, and others to identify patients, patient groups, and or other advocates and stakeholders to facilitate their engagement in the design of the study, the advertising strategy, and the study retention efforts. Lucy will design protocol-specific advertising campaigns in coordination with the University's Communications and Public Affairs Department and liaise with vendors for print, internet, and media ad placement. She will also implement recruitment services for investigators such as the use of the Recruitment Centralized Call Center and the Research Volunteer Repository, as well as prescreening and visit-scheduling services. Lucy believes that her previous roles provided her with necessary tools and background for her exciting new role. Lucy is a native New Yorker, and in her spare time she acts in industrial training videos and in theaters large and small throughout the New York Area. Lucy can be reached at lapicello@rockefeller.edu.

2022 Nurses' Week

By Rita Devine MPA, CRN

From assisting with life threatening ER crises to delivering babies and caring for the elderly in their last moments, nurses perform some of the most difficult and heartbreaking tasks in the medical field.

Starting May 6 and culminating on May 12, International Nurses Day, National Nurses Week honors nurses' contributions and reminds us to thank them for their selfless service. The inspiration for Nurses Day is the birthday of the iconic Florence Nightingale – the British nurse and reformer who dedicated her life to the improvement of the health sector.

This year's theme, "Nurses: A voice to lead – Invest in nursing and respect rights to secure Global Health," is especially meaningful to the nursing staff at Rockefeller. At the very start of the COVID-19 pandemic, as research protocols were rapidly being developed on campus to work on understanding and treating COVID-19, the entire nursing staff, as essential personnel, rallied to support protocol planning and implementation, ensure coordination of care, and fully support research during a painfully unpredictable time. Their work with the Nussenzweig Lab reminded us all that with effective communication, identification of challenges, collaboration, and flexibility, anything is possible.

In the words of Florence Nightingale: "Nursing is a progressive art such that to stand still is to go backwards," and that is why the nursing staff is held in such high esteem at Rockefeller University Hospital.

Meet the Scholar: Mira Patel, MD

By Editorial Staff

Dr. Mira Patel joined the Clinical Scholars program in July 2020 in the Elizabeth and Vincent Meyer Laboratory of Systems Cancer Biology. She received her MD degree from Johns Hopkins University School of Medicine. She completed her surgical internship at Washington University in St. Louis-Barnes Jewish Hospital. Dr. Patel is a second year Clinical Scholar and will serve as Co-Chief in her third year starting July 2022.

How did you get interested in research? Were you always interested?

I became interested in basic science research as an undergraduate at Cornell University. During my freshman year, I joined Dr. John Helmann's laboratory where we studied bacterial antibiotic resistance. It was my first exposure to molecular and microbiology techniques, and I was amazed at the way that we could modify genetic information to help us better understand human disease. Even simpler than that, I found scientific research exciting, challenging, and new every day. I knew I wanted scientific inquiry to be a big part of my career. In medical school, I studied tumor immunology in glioblastoma under the joint mentorship of Michael Lim, Charles Drake, and Drew Pardoll at Johns Hopkins. This was my first experience with translational cancer research. Having the ability to meet patients with glioblastoma in the clinic and to simultaneously study mechanisms of anti-tumor immunity in mouse tumor models gave significant meaning and purpose to my work. From that experience I decided I would dedicate my career to serving as a physician-scientist.

How did you come to the Elizabeth and Vincent Meyer Laboratory of Systems Cancer Biology?

While I was a Radiation Oncology resident, I considered dedicated time to postdoctoral research, which would provide the training required for translational research. My long-term goal is to lead my own laboratory. I chose the Elizabeth and Vincent Meyer Laboratory of Systems Cancer Biology headed by Dr. Sohail Tavazoie because it focused on rigorous study of key mechanisms of cancer progression and metastasis. As an oncologist, I want to focus my research on cancer biology, and it is important to receive training in basic scientific technique and hypothesis testing. Sohail's lab offered both of those components. And, importantly, I very much liked the friendly and collaborative culture within his laboratory.

What is your current research?

My current research focuses on the mechanisms of immune modulation by the human Apolipoprotein E (APOE) variants. We have shown previously in our lab that germline allelic differences in APOE variants can modify melanoma progression and metastasis, with dramatic consequences in survival for patients depending upon which allelic variant they carry. There is evidence that APOE modifies immune responses involved in dementia, infection, and as we have shown, in cancer. I want to understand on a molecular level how APOE modifies immune responses in immune cells.

What were your expectations when you joined the Clinical Scholars program?

My expectations of the Clinical Scholars program have been thoroughly surpassed. It is much more than a master's program. Through Dr. Coller and Dr. Schlesinger's leadership, the Clinical Scholars program is a rich learning environment for aspiring clinician-scientists. In weekly sessions our discussions focus on bridging the divide between rigorous science and impactful medicine, and through this program I have had the opportunity to meet scientists and physicians from a variety of backgrounds who have similar goals as my own, specifically to apply scientific work toward the improvement of health and human disease.

What are your expectations and/or goals as Chief Scholar?

As Chief Scholar I want to continue much of the current programming we have in place regarding education and networking opportunities. I'd also like to survey the scholars as to their individual career goals to specifically tailor speakers and workshops to the scholars' career trajectories. Workshops can include topics such as grant writing, clinical trial design, and community engagement, among others.

What has been a learning opportunity or teaching moment as a Scholar?

A significant learning opportunity early in the Scholars program was designing a clinical protocol and taking it through the IRB approval process. Most trainees have not been the Principal Investigator of their own protocol and have not navigated the process of receiving approval for human subjects research. This is a valuable skill that I am very thankful to have learned prior to becoming an independent investigator. Other learning opportunities as a scholar have come during our weekly tutorials. It is extremely rewarding to learn amongst physicians from a variety of clinical backgrounds. Our discussions range in topics from the delivery of healthcare to novel approaches to drug design. It is truly an enriching experience.

What has been the most educational, interesting, and/or surprising aspect of being in the Clinical Scholar program?

The most educational and rewarding aspect of this program is the tight-knit nature of the group. Dr. Coller, Dr. Schlesinger, and all the scholars come from diverse backgrounds and have already made important strides in their respective fields. To have the opportunity to get to know them, their work, and their experiences as a part of the Scholars 'family' has very gratifying.

If you someone asked you to describe the Clinical Scholars program in one sentence, what would it be?

The Clinical Scholars program is a valuable, enriching environment for individuals who wish to learn how to positively impact human health through scientific discovery.

What are your next steps/career goals when you graduate from the program?

My next step is to seek a position as a physician-scientist at a major academic center. I want to continue seeing patients, as well as focus on building a laboratory to study the impact of inherited germline immunologic variation between individuals in cancer progression and response to immunotherapy.

Meet the Pilot Awardee: Kaja Plucińska, PhD

By Editorial Staff

Kaja Plucińska, PhD, joined the Cohen Laboratory of Molecular Metabolism in January 2020. She is a Novo Nordisk Foundation Postdoctoral Fellow with a dual affiliation at Rockefeller and the Metabolism Center, Copenhagen University, Denmark. She received her PhD in Neuroscience at the University of Aberdeen (UK) where she studied neuronal links between cognitive aging and diabetes.

How did you get interested in research? Were you always interested?

I have always been driven by curiosity and wanted to know how things work. As a teenager I would ask so many questions my family always told me I should be an investigator of sorts, so my path to academia was rather straightforward. When Poland, my homeland, joined the EU in 2004 it really opened all doors for me. I left at 18 to study neuroscience in Scotland and quickly got involved in lab-based work. I never planned on doing a PhD but got one along the way and have since then been following my academic endeavors in Scotland, Denmark, and now the US.

What is your position at Rockefeller University?

I am a Postdoctoral Fellow visiting Paul Cohen's lab from Copenhagen University on a four-year Novo Nordisk Foundation Fellowship for Research Abroad in Endocrinology and Metabolism. This means that my home base is in Copenhagen, but I get to spend 3 years in New York pursuing my scientific interests using approaches and technology that would have not been available to me otherwise.

What is your current research?

My research focuses on understanding the metabolic benefits conveyed by brown adipose tissue (BAT). Brown fat is known for generating heat (thermogenesis) when activated by environmental cold, but a growing body of data suggests that health benefits linked with BAT extend beyond thermogenesis. Six years ago, when I first joined the field, all I knew about fat was that it stores lipids and secretes important factors such as leptin, I asked my then PI at a conference in New Orleans: 'What does brown fat secrete? Is there a brown leptin?' He was stunned by this concept, and we quickly turned it into a research hypothesis. Back then next to nothing was known about brown fat as a secretory organ, though a wealth of data suggested that it may indeed communicate with other organs such as the muscle, liver, or brain to regulate insulin sensitivity, blood flow, fat deposition and behaviors like feeding. We now know based on our own and published data that thermogenic fat encodes well over a thousand secreted proteins, small polypeptides, and signaling lipids, collectively termed 'BATokines,' yet only a handful of them have been characterized to date.

My work in the Cohen lab has been devoted to developing new genetic, molecular, and chemical tools to trace and enrich novel brown fat-derived endocrine factors and establish their impact on metabolic health. In addition to the discovery of potential therapeutic targets, the blood screens resulting from our work may become a valuable data platform for potential blood biomarkers of brown fat. This is of particularly of interest given the studies from our lab led by former Clinical Scholar Tobias Becher demonstrating that BAT prevalence is strongly associated with cardiometabolic health in humans. We therefore aim to translate our basic findings into clinical applications and identify BATokines in human blood as a means of predicting health outcomes in humans.

What is your pilot award project?

The Rockefeller University Center for Clinical and Translational Science NIH Clinical and Translational Science Award Pilot Grant enabled us to initiate a new translational program aiming to identify the first potential blood biomarkers of brown fat in humans. For this pilot study we recruited 20 young and healthy New Yorkers and exposed them to mild cold using a cooling vest approach to identify blood molecules linked with acute activation of brown fat. We are now analyzing plasma samples from individuals before and after 3 hours of cooling with our collaborator Dr. Robert Gerszten at Beth Israel Deaconess Medical Center in Boston who is expert in blood biomarker discovery. Using cutting-edge discovery approaches we will measure levels of a panel of 7000 blood borne molecules and then use bioinformatic approaches and wet lab experiments to validate which are cold-induced factors. Since current methods of BAT detection in humans rely on deep neck biopsies and/or costly FDG-PET/CT scans, identification of blood factors that circulate in proportion to BAT activity or quantity could offer a cost-effective, non-invasive alternative in humans.

What are the expected outcomes to improve human health?

Functional brown adipose tissue was only demonstrated in adult humans in 2009, and our lab has recently shown that individuals with high levels of BAT have significantly reduced risks of having type 2 diabetes (T2D), hypertension, and cardiometabolic disease. Despite the clear associations between BAT and health, we lack accessible and cost-effective means of detecting BAT in humans. We hope to identify potential blood biomarkers of BAT in healthy young humans that predict cardiometabolic health. Additionally, blood molecules identified here will become our primary targets for manipulation in experimental animals to assess their therapeutic potential against obesity, T2D, and associated disease.

What Rockefeller University Center for Clinical and Translational Science resource did you use to conduct your research?

I have received invaluable help from the Hub Research Capacity Core's Clinical Research Facilitation Office, namely Richard Hutt who facilitated all our work on this project, from conceiving of the IRB protocol, to training in good clinical practice and consenting of participants. Our work was also supported by the Clinical Research Office recruitment staff affiliated with the Network Capacity Core and the highly skilled Rockefeller University Hospital nursing staff, who screened candidates and took great care of all our participants. We have also been in dialog with Research Methods Core biostatisticians who will assist with data analysis once we obtain the blood screens from the first cohort of subjects. The study was thus facilitated and conducted with great care and attention to detail, which would have not been possible without the Rockefeller University Center for Clinical and Translational Science.

What are the next steps for your project?

The primary aim of this study was to recruit 20 young and healthy men and women (age range 18 - 28 years old), expose them to cold using a cooling vest approach, and draw blood from them prior to and 3 hours after cooling to identify blood-borne molecules linked

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Manoj Kandpal, PhD, New Director of Research Bioinformatics

By Editorial Staff

Dr. Manoj Kandpal joined the Rockefeller University in January 2022 as the Director of Research Bioinformatics in the Hospital's Informatics department. In this role, Manoj leads the bioinformatics group and manages all the bioinformatics needs for the Center for Clinical and Translational Science (CCTS). The Hospital's Informatics supports bioinformatics and medical informatics prospects of translational research. Although the group primarily provides support to Clinical Scholars, it actively works with other translational science researchers within and outside of Rockefeller University as well.

Prior to joining Rockefeller University, Manoj was a research assistant professor and the Director of the bioinformatics core of The Comprehensive Transplant Centre at Feinberg School of Medicine, Northwestern University. The core provided bioinformatics training and analytic support services to investigators interested in basic, pre-clinical, and clinical transplant studies.

Manoj started his academic career in engineering and graduated as a Bio-Chemical Engineer from Indian Institute of Technology, Banaras Hindu University, Varanasi, India. He obtained his PhD from the National University of Singapore in Chemical and Biomolecular Engineering. His initial research work was in informatics and process control; however, he switched the field and started applying those principles to biological systems. After PhD, Manoj joined the Davuluri Lab at Wistar Institute in Philadelphia followed by Northwestern University as a post-doctoral fellow. Manoj has worked and published in multiple areas including Cancer, Transplant, Epidemiology, Neuroscience and Covid19.

In his new role, Manoj supervises the development of customized bioinformatics tools and implementation of open source and proprietary bioinformatics software programs. He also oversees new developments and ongoing support of ontology-backed, electronic deep phenotype project and the data analysis workflow project. Additionally, Manoj co-chairs the Advisory Committee on Clinical and Translational Science subcommittee on Biomedical Informatics and serve as the CCTS representative on the national Clinical and Translational Science Awards Informatics Domain Task Forces and the National Center for Data to Health (CD2H).

Under his leadership, Manoj would like to increase the options to learn. He plans to focus on developing more open-source NGS pipelines. In addition to providing bioinformatics support and virtual discussions, the CCTS bioinformatics will provide in-person training. The team has presented two webinars in the Rigor, Reproducibility, and Reporting (R3) webinar series. Manoj is planning a one-day bootcamp during the fall and another training session from Qiagen's Ingenuity Systems, a software platform for life science researchers to explore, interpret and analyze complex biological systems. The bootcamp would incorporate training sessions on basic and advance topics related to bioinformatics, including next-generation sequencing and machine learning in biological research. Further, to keep the users informed, Manoj is updating the CCTS bioinformatics department website, https://bioinformatics.rockefeller.edu. More information will be added to it soon.

As the Director of CCTS research bioinformatics, Manoj looks forward to providing the best bioinformatics support and training to the clinical fellows and other university researchers. Rockefeller University has many brilliant people working in the broader area of computational biology, including the researchers at the Bioinformatics Resource Center, Genomics Resource Center, Proteomics Resource Center, IT, HPC and other individual labs. Manoj looks forward to being part of a communicative and collaborative bioinformatics research environment throughout the Rockefeller research community. Manoj can be reached at mailto:mkandpal@rockefeller.edu and 212-327-7923.

Healthix is Coming to Rockefeller University Hospital and Can Help Investigators Know More About the Medical Care of Participants in Research Studies

By Riva Gottesman, MPA, RHIA

Healthix is a non-profit, health information exchange (HIE) funded by the NYS Department of Health. Healthix receives clinical information from more than 8,000 facilities – from large hospital systems to small doctor practices and holds data on more than 20 million patients from the New York City and Long Island area. This is designed to allow users to securely exchange patient data to improve the quality and efficiency of care. To insure privacy, patient data is made available and can be released to health care providers only with patient consent.

Information that is available includes prior treatments, test results, and drug allergies, valuable information that can reduce duplicate tests/labs, lower the likelihood of adverse drug interactions and enhance provider communication.

Data is accessible in the Healthix Portal through Healthix Query which enables search and retrieval of longitudinal patient history and information. Healthix data is updated in real-time with each patient.

Rockefeller investigators and staff can benefit from receiving Healthix Alerts, which informs investigators when a patient in one of their studies receives medical care anywhere in the region. Alerts enable intervention at the point-of-care, facilitate care coordination and provide key information about participants' medical encounters, even if they occur outside of a specific medical network. Healthix Alerts are triggered by an event, such as an admission or discharge from an emergency department, hospital, rehabilitation facility, long-term care facility or New York City correctional health facility.

Currently, Rockefeller is working with Healthix and Cerner to integrate research participant information that is maintained at other institutions. We hope to begin explaining the benefits to participants and enrolling them in the system at the beginning of the summer and to utilize Healthix shortly thereafter.

If you would be interested in learning more about Healthix please contact Riva Gottesman at rgottesman@rockefeller.edu.

Meet the Graduate: Neil Renwick, MBChB, PhD

By Editorial Staff

Dr. Neil Renwick received his MBChB from the Otago Medical School, University of Otago in New Zealand, and his PhD from University of Amsterdam in Amsterdam, the Netherlands. He did his residency training in Anatomic and Molecular Pathology in the Department of Pathology and Fellowship in Emerging Infectious Diseases at Columbia University Medical Center. He joined the Clinical Scholars Program at Rockefeller University in 2007 and performed his research in Dr. Thomas Tuschl's Laboratory of RNA Molecular Biology. Dr. Renwick was selected as the first Chief Clinical Scholar. Currently, Dr. Renwick is the Head of the Renwick Laboratory of Translational RNA Biology at Queens University, Kingston, Ontario, Canada

How did you get interested in research? Were you always interested?

My dad was a physician scientist and Head of Biochemistry at the University of Auckland. He was also a wonderful storyteller and a point of contact for scientists visiting New Zealand. While growing up, I met Fred Sanger and Carleton Gajdusek. Every few months, Carleton would send me recent papers from his lab on NIH's dime. In medical school, I loved learning about fundamental scientific discoveries and their clinical implications in our "Abnormal Structure and Function" course. This is where I first heard about this amazing place called The Rockefeller University. Given it was on the other side of the planet, it seemed almost mythical.

How did you come to Tuschl Lab?

Getting from Otago to the Tuschl lab would make a riveting three-part docudrama! The short version is I worked as a medical officer in Australia, Papua New Guinea, and Thailand, did a PhD in Virology at the University of Amsterdam, and trained in anatomic pathology at Columbia. Due to a program accreditation snafu, I was ineligible to certify in molecular pathology, so I searched for programs that encouraged research and provided protected time to do the research. In my internet search, I was fortunate to find the Clinical Scholars program, which was ideal for my career goals. Initially, I was a little intimidated given the premier research conducted at Rockefeller. Out of many exciting possibilities of mentors, I thought Tom Tuschl could provide the right combination of education and experience with RNA molecular biology and I could contribute my medical knowledge in return. It worked out really well. Winfried Freiwald once asked Tom what I did in the lab and Tom deadpanned "Neil creates problems." The best part of creating problems was the freedom to explore and provide solutions.

What is your current research?

I currently work on microRNA-mediated gene regulation in neuroendocrine neoplasms. This project stems from Barry's and Tom's advice to "leverage my pathology knowledge" and is based on a histologic observation that Merkel cell carcinoma (MCC), an aggressive neuroendocrine tumor, can sometimes look like basal cell carcinoma (BCC). Given the devastating impact of a misdiagnosis, I wondered if microRNAs could be used to differentiate the two tumors. Wildly, we found excellent miRNA markers for each tumor type. My lab still works on the clinical and biological implications of these findings. Although more work is needed, some miRNAs are excellent tissue and circulating biomarkers for neuroendocrine neoplasms and are also critical regulators of neuroendocrine differentiation and tumorigenesis. The liquid biopsy component, in which a simple blood sample is analyzed for circulating nucleic acid-containing molecules, is an exciting collaboration with Klaas Max in Tom's lab.

What were your expectations when you joined the Clinical Scholars program and were they met?

I tend to dial back expectations and just let new experiences wash over me. That said, my expectations for the Clinical Scholars program were more than met! I learned so much from the weekly discussions with Barry and Sarah Schlesinger, Roger's statistics course, the certificate program, the graduate-level course, and the clinical research and other campus seminars. Plus, mentored training in creative and impactful scientific research from Tom was and is an absolute career highlight. Actually, I did hope to land an NIH K08 career development award before the end of the Clinical Scholars program. With protected time, a grant writing guidebook, and generous input from Tuschl lab members, I was successful on my first attempt.

What has been a learning opportunity or teaching moment as a Scholar?

Being asked to serve as Chief Clinical Scholar was both an honor and a wonderful learning opportunity. There are many people at Rockefeller who make leadership look so easy. Turns out, it's quite hard and a little isolating! But I took it seriously, read as much as possible on leadership, and "borrowed" heavily from Barry and other people's styles, which shaped all my leadership roles.

What has been the most educational, interesting, and/or surprising aspect of being in the Clinical Scholars program?

The most educational aspects of the Clinical Scholars program were a little unscripted but reviewing pilot grants with Jim Krueger, Charlie Rice, and Luciano Maraffini and reviewing projects for ACCTS under Bob Darnell's supervision were masterclasses in critical and lateral thinking. The most interesting aspect of the program, for me, were the off-the-record lunches and dinners with guest speakers; the Clinical Scholars dinner with Paul Nurse was an absolute riot!

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The most surprising aspect was the number of people willing to contribute to our success as Clinical Scholars. Of course, Barry, Sarah, Jim, and Michelle! Also, the Clinical Research Support Office, now under Rhonda, the entire Rockefeller University Hospital staff, the resource core directors, and the folks from development. And, importantly, the HOLs who shared their own career stories, including Luciano Maraffini who lent me his 3-page project summary and helped me land my current job after I missed an opportunity at Fred Hutchinson!

If you someone asked you to describe the Clinical Scholars program in one sentence, what would it be?

A glimpse at your scientific future.

What takeaways would you share with a junior Scholar?

#1. Rockefeller is an unusual place, the platinum standard of doing premier research.

#2 Protected research time is a gift so make the most of it.

#3. Participate even when it's not immediately obvious how useful the session is; I never thought I'd need media training until a fly went up my nose during a TV interview in Eastern Siberia, and I needed to carry on as if this was a usual occurrence. My composure never waivered.

#4. Seriously consider writing a K08 or K23 grant, it could change your life.

#5. You will make lifelong colleagues and friends and have wonderful stories for your own dinner table.

I-Corps Entrepreneurship Training: (continued)

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the National Innovation Network (NIN) entrepreneurship ecosystem. The goal of this award is to create and maintain a culture of innovation dedicated to the advancement and teaching of deep technology entrepreneurship.

I-Corps trainees learn to identify valuable product opportunities that can emerge from academic research, and gain skills in entrepreneurship through training in customer discovery and guidance from established entrepreneurs. Participants will learn to identify and address knowledge gaps to understand the most appropriate path forward for their technology concept. All Rockefeller students, postdoctoral fellows, and faculty are eligible to participate in programming orchestrated by the NYCRIN hub members. This includes regional short courses, boot camps, and events with partnering institutions. Participation in any regional I-Corps program also qualifies the participant to enroll in the more comprehensive, seven-week National programs offered by the NSF and/or NIH.

Funding Opportunities

Dedicated funding mechanisms are essential for the translation of basic research discoveries into breakthrough medications, novel diagnostic tests, and other innovations for the clinic. The Robertson Therapeutic Development Fund, made possible through a generous grant from the Robertson Foundation, is an internal fund that is deployed to support studies within the university or externally in a fee-for-service arrangement to advance the technology to a point that is more attractive for outside investment. To date, RTDF-funded programs have yielded over eighty patents and the formation of at least eight new companies. Twelve clinical trials have been conducted in the Rockefeller University Hospital, including seven first-in-human trials. The RTDF as been transformative for the University and has created a robust pipeline of novel assets for commercial development.

More recently, the University has also established the Kellen Women's Entrepreneurship Fund (Kellen WEF) which builds on the pioneering Women & Science initiative. The Kellen WEF is designed to help ensure that women scientists at Rockefeller who want to realize the therapeutic potential of their discoveries have the tools, support, and knowledge to do so. To date, the Kellen WEF has provided twelve proof-of-concept awards across three funding cycles.

The translational research infrastructure created by Rockefeller University serves as a powerful entrepreneurial training ground. By leveraging the mechanisms described above, Rockefeller is well positioned to realize the full potential of faculty-led breakthroughs. For more information on the training and funding programs described above, please contact Dr. Bruce Conway 212-327-8376.

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Meet the Pilot Awardee: Kaja Plucińska, PhD (continued)

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with activation of brown fat. We have currently completed sample collection for this study and shipped de-identified samples for biomarker discovery. When we receive the initial data, we hope to cross-reference it with various brown fat genetic data to identify brown fat-derived molecules as well as intersect it with extensive blood screens from non-diabetic, diabetic, lean, and obese individuals generated by colleagues to look for clinical correlations between specific blood molecules and health or disease. Finally, we hope to validate the most promising blood biomarker candidates in blood samples from individuals with and without brown fat.

Discovering that Viruses are Made Up of Protein and Nucleic Acid

By Elizabeth (Betsy) Hanson

In 1935 Wendell Stanley (1904-1971), a young chemist working in the Rockefeller Institute's laboratories in Princeton, NJ, purified a virus in the form of needle-shaped crystals with the chemical properties of a protein. It was perhaps the most startling discovery to date in the Institute's history. How could a virus, with its ability to infect and multiply, also be an inanimate chemical—an inert molecule? Stanley's finding prompted discussion of the question, "what is life?" as well as much criticism. Further research elsewhere, confirmed in Stanley's laboratory, soon demonstrated that the infectious substance was in fact a combination of protein and the nucleic acid, RNA. The results called attention to the similar reproductive powers of viruses and genes (not yet known to be DNA), and helped lay the groundwork for modern molecular biology. For his achievements, Stanley shared the Nobel Prize in Chemistry in 1946 with his Rockefeller colleague John H. Northrop (1891-1987) and James B. Sumner.

Stanley experimented with tobacco mosaic virus (TMV), which causes spots on the leaves of infected plants. By the time he began his studies in the early 1930s, TMV was well known to laboratory researchers. Others had shown that it could be manipulated chemically without losing its ability to infect. Stanley decided to apply to TMV methods for crystallizing proteins that had been developed by his Rockefeller colleagues John Northrop and Moses Kunitz. Although more than 300 human, animal, and plant viruses were known to science, when Stanley began his research it was not known whether viruses were, in his words, "inorganic, carbohydrate, hydrocarbon, lipid, protein, or organismal in nature."

In addition to opening questions about the basic nature of viruses that set the course for the field of virology, Stanley's own research had a more immediate impact on medicine. During World War II, he turned his attention to developing an inactivated vaccine for viral influenza. He used a Sharples centrifuge—a piece of equipment widely used in the dairy industry at the time—to obtain concentrated and purified quantities of the virus. The centrifuge's large capacity and efficiency made it possible to scale up production of the vaccine, and Stanley's method was used in the development of commercial vaccines. In the late 1950s and 1960s Stanley advocated for research on tumor viruses to aid in understanding human cancers, testifying before Congress to support the National Cancer Institute, and helping to support the passage of the National Cancer Act in 1971.

Wendell M. Stanley received his undergraduate education at Earlham College (1926) and the PhD from the University of Illinois (1929). He remained at Illinois as an instructor, and a National Research Council Fellowship allowed him to spend the academic year 1929-1930 in Munich working with Heinrich Wieland. In 1931 Stanley was appointed to a position at the Rockefeller Institute in the laboratory of W.J.V. Osterhout, and in 1932 he moved to the division of plant pathology under Louis Kunkel. He became a member of the Institute in 1940. In 1948 Stanley joined the University of California at Berkeley as founder of the Virus Laboratory and chairman of the department of biochemistry (1948-1953). He later became professor of virology and chairman of the virology department (1958) and remained at Berkeley the rest of his career, retiring in 1969. In addition to the Nobel Prize (1946), Stanley's achievements were recognized with more than a dozen honorary degrees; election to the American Philosophical Society (1940) and the U.S. National Academy of Sciences (1941); the Nichols Medal of the American Chemical Society; the Presidential Certificate of Merit (1948); the American Cancer Society's Medal for Distinguished Service in Cancer Control (1963); and selection as president of the Tenth International Cancer Congress (1970).

Tobacco mosaic virus