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Dean's Research Newsletter, October 2020

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I am pleased to share with you the latest edition of the research newsletter that spotlights research projects on COVID-19 and other topics across New York Medical College (NYMC). The commitment by our faculty and students to carry out important research that continues to advance us scientifically in many areas is truly commendable.

Supporting research remains one of the major priorities at NYMC. Therefore, I am happy to share that we will be implementing a research incentive plan, which aims to reward exceptional performance by our full-time faculty; thereby aiding in achieving the research and educational goals of the College. More details on the plan can be found later in this newsletter.

We continue to support research through the targeted acquisition of new equipment. Recently, thanks to the efforts of Saloman Amar, D.D.S., Ph.D., vice president for research and professor of pharmacology and of microbiology and immunology, NYMC purchased a Quantum GX2 microCT (computerized tomography) Imaging System that can be used for longitudinal in vivo imaging as well as for scanning of ex vivo samples. In addition, Dana G. Mordue, Ph.D., associate professor of microbiology and immunology, led efforts that resulted in a shared instrumentation grant from the National Institutes of Health (NIH) that has enabled the purchase of a Zeiss LSM 980 plus Airyscan 2 confocal system that will be incorporated into the NYMC Histopathology and Imaging Core.

Congratulations to everyone as you continue your research, collaborations and success in securing grants. I look forward to sharing the results in future newsletters. Be safe and well.

Jerry L. Nadler, M.D., MACP, FAHA, FACE
Dean of the School of Medicine
Professor of Medicine and Pharmacology

Recommended Article

Negative Impact of the COVID-19 Pandemic on the Timely Diagnosis of Tick-borne Infections

published by

Gary P. Wormser, M.D.,

Professor of Medicine, Pharmacology and of
Microbiology and Immunology

and medical students

Eliana Jacobson
SOM Class of 2023

Elayna M. Shanker
SOM Class of 2023



NYMC Alumna is PI on FDA Clinical Trial on Use of Human Cord Tissue to Treat Children with COVID-19

According to the American Academy of Pediatrics (AAP), the cumulative number of COVID-19 cases diagnosed in children tripled between July and September, totaling more than 500,000 with some of these children developing Multisystem Inflammatory Syndrome in Children (MIS-C). Currently, Joanne Kurtzberg, M.D. '76, is leading a clinical trial approved by the U.S. Food and Drug Administration (FDA) to determine if infusions of human cord tissue are safe to treat children with COVID-19 and MIS-C.

Dr. Kurtzberg is an internationally renowned expert in pediatric hematology/oncology, pediatric blood and marrow transplantation, umbilical cord blood banking and transplantation as well as in novel applications of cord blood in the emerging fields of cellular therapies and regenerative medicine. She is the Jerome Harris Distinguished Professor of Pediatrics and professor of pathology at Duke University School of Medicine. Dr. Kurtzberg also serves as director of the Marcus Center for Cellular Cures, director of the Pediatric Blood and Marrow Transplant Program, director of the Carolinas Cord Blood Bank and co-director of the Stem Cell Transplant Laboratory at Duke.



“With the generous support of the Marcus Foundation and through work performed in the Marcus Center for Cellular Cures, we have manufactured and characterized a unique cell, human cord tissue mesenchymal stromal cells (hCT-MSC), from healthy umbilical cord tissue donated to our cord blood bank,” says Dr. Kurtzberg. “The hCT-MSCs, which are unique cells capable of modulating and suppressing inflammation, have been tested in a variety of conditions in which inflammation plays a role in the disease evolution, including in children with autism spectrum disorder, babies with hypoxic ischemic encephalopathy, children with cerebral palsy and adults with osteoarthritis of the knee.”

The FDA clinical trial will determine if infusions of hCT-MSCs are safe and can suppress the hyper-inflammatory response and positively impact the symptom course and duration of MIS-C, as well as the long-term effects of this life-threatening syndrome. The Department of Pediatrics at NYMC is one of three centers participating in the study. [Read full story on clinical trial.](#)

Faculty Publish on Emerging Neurological Issues from COVID-19



Although COVID-19 has predominantly presented with respiratory symptoms, since the outbreak began, neurological manifestations have been increasing as well, including frequent complaints of anosmia and seizures as well as unusual cases of pulmonary thrombosis and ischemic stroke.

Over the last several months, faculty from the Departments of Neurology, Neurosurgery, Pediatrics and Radiology, assisted by residents and students, have sought to add to the growing body of literature on this topic with several papers already published on the neurological issues they've observed.

“Through our experiences on the frontlines of the COVID-19 pandemic in New York, we have learned many novel aspects of its impact on the neurological health of our patients. With these preliminary publications, our group is hoping to disseminate key, previously uncharacterized, clinical and radiographic features that are essential to better understanding and managing this complex disease,” says Chirag Gandhi, M.D., chair of the Department of Neurosurgery and professor of neurosurgery, neurology and of radiology. [Read full story on published studies.](#)

Bridge and Seed Funding Grant Programs - 2020-2021 Competition

Deadline for Bridge Funding Grant Program application is December 14, 2020.

Deadline for Seed Funding Grant Program application is December 21, 2020.

Program guidelines, instructions, and application forms are available on the [website](#).

NYMC Receives \$594,000 NIH Shared Instrumentation Grant

The collaborative efforts of a team of NYMC faculty researchers has resulted in a \$594,269 shared instrumentation grant from the NIH, which will be used to purchase a new high-resolution confocal microscope. The team, made up of nearly 20 NYMC faculty from across the basic science disciplines, was led by Dana G. Mordue, Ph.D., associate professor of microbiology and immunology.

The confocal system, which will be critical to the College's biomedical research, will allow NYMC researchers to quantitatively visualize dynamic processes in living specimens gently over extended periods of time (4D imaging). The increased sensitivity and high resolution will be particularly valuable to image thicker tissue sections/slices in a wide variety of biological specimens.



"The development and expansion of instrumentation in the NYMC research cores, including the NYMC Histopathology Laboratory and Imaging Core, were identified as one of the top strategic priorities in the College's recent Strategic Plan," says Dr. Mordue. "This is critical instrumentation for the NYMC research community. Not only will this acquisition enhance our research footprint and capabilities—but it will also help to ensure our ability to retain creative and successful faculty. The instrument will also be important for establishing current and new research centers and the recruitment of highly qualified new faculty to build our research mission." [Read the story about the impact of the new grant.](#)

Research Incentive Program Announced

The School of Medicine (SOM) is pleased to announce a new Research Incentive Program developed by Dean Nadler with the support of College administration. This program, the first of its kind at NYMC, aims to recognize and reward exceptional performance through the retention of highly productive, funded faculty and help in recruiting outstanding and renowned faculty to help achieve the research and education goals of the College.

The program identifies named principal investigators who are able to charge 50 percent or more of their salary to federal, commercial, pharmaceutical and/or foundation grants on a fiscal year. Overhead earned from these grants are then redistributed to principal investigators and their departments subject to a maximum cap of \$15,000 per principal investigator for the following fiscal year. Funds can then be utilized for defraying expenses for teaching and/or research endeavors.

The SOM appreciates the work of the NYMC administration for their collaboration, support and endorsement of this new program.

Research Incentive Program Requirements and Highlights:

1. The principal investigator (or co-investigator) is a full-time employee (at least 35 hour per week).
2. The principal investigator must charge at least fifty percent (50%) of their salary to grant funding (that generates overhead) for the entire fiscal year.
3. Qualified grants will have an overhead rate of thirty percent (30%) or more.
4. Five percent (5%) of the combined overhead from all grants will be distributed at the rate of ninety percent (90%) to each principal investigator and ten percent (10%) to the department subject to a limit of \$15,000 per principal investigator.
5. Funds will be made available the following fiscal year to supplement the operating budget (non-personnel) of the departments and that of the principal investigators.
6. Funds are to be used for purchasing educational/research items only and are subject to the approval by the department chair and Office of the Dean of the SOM.
7. This is a pilot program, conditional on the operating budget, and is subject to an annual review during the budget planning process by the Finance Department and the Office of Research Administration.
8. A modified program for clinical investigators is under discussion.

New Study Reports Groundbreaking Treatment for Sickle Cell Disease



New treatment methods that involve a stem cell transplant with modified cells from a tissue-mismatched family member have the potential to eliminate many of the devastating symptoms of sickle cell disease for children and adolescents with the high-risk disease, according to a five-year study, [“Familial Haploidentical Stem Cell Transplant in Children and Adolescents With High-Risk Sickle Cell Disease.”](#) led by Mitchell S. Cairo, M.D., professor of pediatrics, pathology, microbiology and immunology, medicine and of cell biology and anatomy, that was recently published in *JAMA Pediatrics*.

As reported in an article in *Advancing Care in the Hudson Valley*, the trial is the first to suggest children can receive a stem cell transplant with modified cells from a tissue-mismatched family member. The groundbreaking treatment consists of harvesting cells from the tissue-mismatched family donor, re-engineering those cells through bone marrow stem cell enrichment and reducing the immune cell components in the

donor cells. The reengineered cells are then transplanted to the pediatric trial participant.

Nineteen patients with sickle cell disease between the ages of 2 and 21 were enrolled in the trial between September 2012 and September 2017. Ninety percent of patients experienced at least one year free of the disease following the transplant. A second phase of this study is now underway.

Grants Corner

Debra E. Bessen, Ph.D., professor of microbiology and immunology, received a \$83,280 grant from the NIH for “Pilin Genotyping for Group A Streptococci.”

Mitchell S. Cairo, M.D., professor of pediatrics, pathology, microbiology and immunology, medicine and of cell biology and anatomy, received a \$200,000 grant from The Children’s Cancer Fund to support the “Children’s Cancer Fund Laboratory (CCFL) at New York Medical College” and a \$50,000 grant from Infinite Live for Kids for “Combinatorial Targeted and Humoral Cellular Immunotherapy in Burkitt Lymphoma.”

Allen J. Dozor, M.D., professor of pediatrics, received a \$59,298 grant from Calithera Biosciences for “A Phase 1B Randomized, Double-Blind, Placebo-Controlled Trial to Evaluate the Safety Of CB-280 in Patients with Cystic Fibrosis CX-280-202.”

Marina K. Holz, Ph.D., dean of the Graduate School of Basic Medical Sciences and professor of cell biology and anatomy, received a \$75,000 grant from Cayman Biomedical Research Institute for “Characterization of Estrogen-mTORC1 Signaling Network in TSC/LAM.”

Rifat Latifi, M.D., chair and professor of surgery, received a \$38,706 grant from Allergan for “Comparison of Sample Characteristics Between the Subjects who Received Strattice Mesh for Abdominal Wall Reconstruction at Westchester Medical Center vs Americas Hernia Society Quality Collaborative (AHSQC) Registry Dataset.”

Yanling Liao, Ph.D., clinical assistant professor of pediatrics, received a \$295,000 grant from Debra for “Identifying Innate and Adaptive Immune Mechanisms Associated with Fibrosis in Animal Models of RDEB.”

Eliana Scemes, Ph.D., professor of cell biology and anatomy, received a \$60,276 grant from AECOM for “AQR4 Isoforms and Brain Edema.”

Libor Velisek, M.D., Ph.D., professor of neurology, received a \$20,000 grant from Anavex for “ANAVEX AN3-71A for Treatment of Infantile Spasms.”

[Weekly NIH Announcements and NIH Funding Opportunities](#)

NYMC Office of Research Administration: [Learn more about funding opportunities here.](#)

NYMC Faculty and Students Publish Study Demonstrating Black Seed Oil Plus Omega-3s May Counter Obesity-Induced Inflammation and Insulin Resistance

Overweight individuals and obesity are a growing worldwide public health concerns and pose a significant healthcare burden. A recent study conducted at NYMC this summer and published in *Antioxidants* demonstrated that combining omega-3 fatty acids with a standardized oil from black cumin (*Nigella sativa*) may significantly reduce inflammation caused by a high-fat (Western) diet.

The study, ["Cold-Pressed *Nigella Sativa* Oil Standardized to 3% Thymoquinone Potentiates Omega-3 Protection Against Obesity-Induced Oxidative Stress, Inflammation, and Markers of Insulin Resistance Accompanied with Conversion of White to Beige Fat"](#) was led by Nader G. Abraham, Ph.D., Dr.H.C., FAHA, professor of medicine and pharmacology, and involved several SOM students

from the Class of 2023 – Leah Gancz, Lior Levy, Ariel Sasson, Joseph Trainer and Abraham Resnick.

"Obesity is a chronic inflammatory disease manifested by an increase in cytokine levels at baseline, increasing the risk of a 'cytokine storm' in chronically obese patients," says Dr. Abraham. "The major cause of obesity results from the imbalance of excess caloric intake and insufficient energy expenditure that may contribute to adipose tissue accumulation, expansion and hypertrophy. These pro-inflammatory adipokines and cytokines play a pivotal role in the development of obesity-associated metabolic dysfunction, such as insulin resistance, type 2 diabetes, hypertension, cardiovascular diseases and certain types of cancer."

"Dietary-induced obesity also results in hepatic fat accumulation, fatty liver disease and deterioration in liver function. Fatty liver and non-alcoholic fatty liver disease (NAFLD) affect approximately 25 percent of adults and is the most common cause of chronic liver disease in the Western world. There are currently no approved drugs for the treatment of NAFLD."

[Read full story on black seed oil study.](#)



Research Underway to Identify New Therapies for Bladder Cancer

Bladder cancer, diagnosed in 6,900 New Yorkers in 2016, is the third most commonly diagnosed solid tumor in the state and the fifth most common cause of cancer-related death. Treatments for low stage disease, which make up 80 percent of new cases, are intended to prevent progression to high stage disease and the morbidity and cost of radical treatments.

"Since the 1980s, the most common treatment for low stage disease has been intravesical Bacillus Calmette Guerin (BCG) vaccine, a kind of immunotherapy in use against bladder cancer," says John L. Phillips, M.D., professor of urology. "However, due to a nationwide shortage of BCG, there is a desperate need to identify new therapies that would kill low stage bladder cancers, preserve quality of life and have clinical feasibility."

Currently, Dr. Phillips and Dazhong Xu, Ph.D., associate professor of pathology, are conducting research into the use of nanoparticle-based chemotherapy to treat bladder cancer. The research project, "Nanoparticle Therapy Center: Multidisciplinary Approach to Develop Therapies for Organ Preservation in Bladder Cancer Using Nano-Carrier Delivered Chemotherapy," is supported by a \$574,000 grant from the Empire Clinical Research Investigator Program that is being administered by Westchester Medical Center, with the research conducted in the Department of Pathology at NYMC.

"Nanoparticles are micro-engineered molecules derived from self-assembly physics and may be designed to carry chemotherapies to target sites," says Dr. Phillips. "Currently, nanoparticles are being used to combat tumors of the brain, liver and pancreas." Dr. Phillips and Dr. Xu are using a transgenic mouse model of bladder cancer to determine which nanoparticles and chemotherapies can be combined to effectively treat bladder cancer in mice.

"We are working to understand the pathophysiology of successful versus unsuccessful treatment strategies and identify the molecular subtype of responders versus non responders with the goal of developing clinical trials as part of a National Cancer Institute (NCI) research consortium in 2021."

Surgery Management is Good Option for Acute Pulmonary Embolism Patients



A recent study, [“Survival and Right Ventricular Function After Surgical Management of Acute Pulmonary Embolism.”](#) published in the *Journal of the American College of Cardiology* by several faculty members of the NYMC Departments of Surgery and Medicine—Joshua B. Goldberg, M.D., assistant professor of surgery; Daniel M. Spevack, M.D., clinical professor of medicine; Tanya Dutta, M.D., clinical associate professor of medicine; Suguru Ohira, M.D., Ph.D., clinical assistant professor of surgery; Masashi Kai, M.D., assistant professor of surgery; David Spielvogel, M.D., professor of surgery; Steven L. Lansman, M.D., Ph.D., professor of surgery; and Ramin Malekan, M.D., assistant professor of surgery, found that surgical management of patients with massive or high-risk submassive acute pulmonary embolism (PE)—either with embolectomy or venoarterial extracorporeal membrane oxygenation (ECMO)—rescued right ventricle (RV) function with low morbidity and mortality.

According to Dr. Goldberg, who led the team of researchers, use of either technique was associated with excellent survival along with recovery of right ventricular function. In a population that normally has a mortality rate of 15 to 40 percent, the Westchester Medical Center (WMC) treatment strategy was associated with a mortality rate of only 4.4 percent with few postoperative complications.

“What we demonstrate here is that the patients do really well,” he said in a recently published article in [TCTMD](#). “The mortality is low, the morbidity is low, and their right ventricles recover. Because the original procedure had such high mortality, well over 50 percent, it created a sort of dark cloud, a shadow, over surgical embolectomy so that in the minds of surgeons and the minds of other providers it was seen as a last line of defense.”

But the procedure has since evolved greatly and according to Dr. Goldberg, “The medical community has really come together over the last several years to develop a multidisciplinary approach to evaluating and treating these patients, and I think it’s very important that given the data that surgery is closely involved in the decision-making process. Because I think that this is a treatment that can really save a lot of lives in the most-ill patients if they’re treated expeditiously.”

Summary of Research Needs Survey Shared

Several months ago, the Research Support Services Committee, under the direction of Christopher S. Leonard, Ph.D., chair of the Committee, interim chair of the Department of Physiology and professor of physiology, conducted a survey of the faculty to better understand their current and future research activity and needs. The survey garnered 143 responses from all faculty ranks across basic science and clinical departments from the SOM, Graduate School of Basic Medical Sciences (GSBMS) and the School of Health Sciences and Practice (SHSP).

Results from the survey included several suggestions to better engage faculty in the competition for extramural funding, including better grant development support, biostatistics support and improvements to the clinical or educational research development and approvals. Results from the survey also provided insight into factors that could improve ongoing research, such as improving the genomics and histology cores, as well as improving the advanced imaging core, though the recent NIH Shared Instrumentation Award (PI: Dana G. Mordue, Ph.D., associate professor of microbiology and immunology) to acquire a high resolution, confocal microscope addresses a critical part of this need and should greatly enhance our imaging capabilities.

Now that the initial analysis of the survey results has been completed, the next steps for the Committee will be to dig deeper into the finding to identify the most important needs for basic sciences and clinical researchers and to develop a suggested timeline for taking specific actions to address these and other emerging issues. The full data from the survey will also be shared with other divisions as appropriate, with the anticipation that these findings will be used for strategic planning efforts underway and beginning in the SOM, SHSP and the GSBMS.

Medical Students Spearhead Student Research Seminar Series

Members of the Medical Student Research Committee have continued to keep the student research community connected through a series of seminars that showcase student research on campus. The seminars, which have been led by SOM members of the Class of 2023 Eliana Jacobson and Christopher Katchis since January, help students practice their presentation skills and give NYMC students a breadth of research knowledge and awareness. The seminar series’ transition to a virtual format has also allowed for a much broader reach.

Additional members of the Medical Student Research Committee who have led or will lead seminars include: Class of 2021 - Jayaji More, Ruth Angrand and Youxin Guan; Class of 2022 - Catherine Donlon and Avery Wilson; Class of 2024 - Rebecca Starkman and Asim Ahmed.

Faculty Publications & Updates

NYMC faculty are notable scholars and researchers who are published in leading journals across a wide range of health science disciplines. This listing represents just a small sample of recent publications.

More than 20 faculty members in the Department of Surgery and four SOM graduates collaborated on the recently published book *Surgical Decision Making in Geriatrics – A Comprehensive Multidisciplinary Approach*, which is designed to present a complete and state-of-the-art approach to all aspects of geriatric surgery. They include **Kaveh Alizadeh, M.D.**, clinical associate professor of surgery, **Patrice L. Anderson, M.D.**, assistant professor of surgery, **Sateesh C. Babu, M.D.**, professor of surgery, **Roberto Camillo M. Bergamaschi, M.D.**, professor of surgery, **Vincent F. Blood, M.D.**, assistant professor of surgery, **Francis X. Carroll, M.D.**, clinical assistant professor of surgery, **Maria T. Castaldi, M.D.**, clinical assistant professor of surgery, **Jorge Con, M.D.**, assistant professor of surgery, **Thomas Diflo, M.D.**, professor of surgery, **Xiang Da Dong, M.D.**, clinical associate professor of surgery, **James M. Feeney, M.D.**, clinical associate professor of surgery, **Joshua B. Goldberg, M.D.**, assistant professor of surgery, **Ashutosh Kaul, M.D.**, professor of surgery, **Igor Laskowski, M.D.**, associate professor of surgery, **Rifat Latifi, M.D.**, chair of Department of Surgery and professor of surgery, **Romeo B. Mateo, M.D.**, assistant professor of surgery, **Seigo Nishida, M.D.**, clinical professor of surgery, **Anthony Policastro, M.D.**, assistant professor of surgery, **Kartik Prabhakaran, M.D.**, assistant professor of surgery, **Gregory R. Veillette, M.D.**, assistant professor of surgery, **Tracey L. Weigel, M.D.**, clinical professor of surgery, **Vasu Chirumamilla, M.D.**, instructor of surgery, **Ansab A. Haider, M.D.**, instructor of surgery, **Aditya Safaya, M.D.**, instructor of surgery, **Donna C. Koo, M.D.** '20, **Matthew K. McIntyre, M.D.** '20, **Julia Pazniokas, M.D.** '20 and **Brianna Theriault, M.D.** '20.

Cara L. Grimes, M.D., associate professor of obstetrics and gynecology, has been named chair of the newly formed Society for Gynecologic Surgeons Collaborative Research in Pelvic Surgery Consortium (SGS CoRPS).

Robert Fekete, M.D., associate professor of neurology, has been named associate editor for the Movement Disorders Resources Center at *Medlink Neurology*.

Tanya Boucher, SOM Class of 2021, Samantha Golden-Espinal, SOM Class of 2021, Kamila Evans, SOM Class of 2021 and **Camille A. Clare, M.D., M.P.H.** '11, associate dean of diversity and inclusion and associate professor of obstetrics and gynecology, published "[Addressing Disparities in Prenatal Care via Telehealth During COVID-19: Prenatal Satisfaction Survey in East Harlem](#)" in the *American Journal of Perinatology*.

Sangmi Chung, Ph.D., associate professor of cell biology and anatomy, psychiatry and behavioral sciences and neurology, published "[Human Forebrain Endothelial Cell Therapy for Psychiatric Disorders](#)" in *Molecular Psychiatry*.

Sangeeta Kumaraswami, M.D., assistant professor of anesthesiology, **Tana Pradhan, D.O.**, clinical associate professor of obstetrics and gynecology, **Sorana Vrabie-Wolf, M.D.**, instructor of obstetrics and gynecology, **Sadaf R. Lodhi, D.O.**, clinical assistant professor of obstetrics and gynecology, **Geetha Rajendran, M.D.**, assistant professor of obstetrics and gynecology, **Sean S. Tedjarati, M.D., M.P.H., M.B.A.**, chair of the Department of Obstetrics and Gynecology and clinical professor of obstetrics and gynecology, and **Cara L. Grimes, M.D.**, associate professor of obstetrics and gynecology published "[Response of an Obstetric unit during the COVID-19 Pandemic: Experiences from a Tertiary Care Center](#)" in the *American Journal of Perinatology Reports*.

Sean Lynch, SOM Class of 2021, and Lidia Klepacz, M.D., assistant professor of psychiatry and behavioral sciences, published "[Case Report: Buprenorphine-A Treatment for Psychological Pain and Suicidal Ideation?](#)" in the *American Journal on Addictions*.

Aaqib H. Malik, M.D., M.P.H., clinical assistant professor of medicine, **Wilbert S. Aronow, M.D.**, professor of medicine, **Howard A. Cooper, M.D.**, clinical professor of medicine, and **Julio A. Panza, M.D.**, professor of medicine, published "[Meta-Analysis of Dual Antiplatelet Therapy Versus Monotherapy with P2Y12 Inhibitors in Patients After Percutaneous Coronary Intervention](#)" in the *American Journal of Cardiology*.

Neil Schluger, M.D., the Barbara and William Rosenthal Chair of the Department of Medicine and professor of medicine, has had "Influence and Reach of Medical Articles Posted on Pre-Print Servers during the COVID-19 Pandemic" accepted for publication in November in *JAMA Internal Medicine*.

[See full list of recent Faculty Publications.](#)