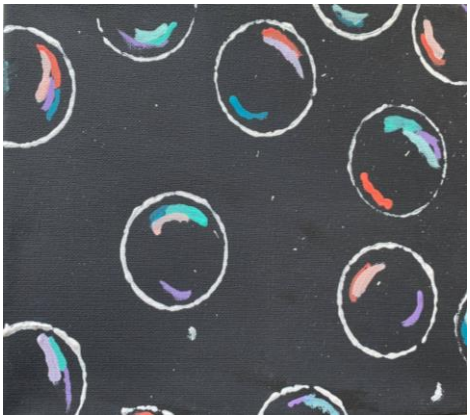
The Art and Science of Pediatrics



Volume 18 | 2020-2021
March 10, 2021

Pediatric Interest Group
Weill Cornell Medical College

Weill Cornell Medicine

NewYork-Presbyterian
Phyllis and David Komansky
Children's Hospital

Weill Cornell Medicine Pediatrics

NewYork-Presbyterian Kids Komansky Children's Hospital

March 2021

Dear Weill Cornell Medicine Students and Faculty:

On behalf of the Department of Pediatrics and the Weill Cornell Medical Student Pediatric Interest Group, it is a pleasure for me, as incoming Chair, to welcome you to the **Eighteenth Annual Pediatric Research Day**. In addition to medical student research and scholarly project abstracts, this year's Journal, "The Art and Science of Pediatrics," features interviews with faculty, activities sponsored by the Pediatric Interest Group and community service opportunities for medical students.

The work presented in this journal and presented at Pediatric Research Day – which is virtual this year -- is the product of a wonderful collaboration between our medical students and faculty committed to developing the next generation of pediatric scientists. This year, our students have accomplished this work despite the tremendous demands placed on their time by medical school in the face of the COVID-19 pandemic. We affirm that opportunities to do research, participate in clinical investigation, and volunteer with service learning organizations that focus on pediatric medicine provide a strong basis for successful medical careers and lifelong learning.

As Chair of Pediatrics, I congratulate and thank the students and faculty mentors on the success of their efforts, and acknowledge the strong leadership of the Pediatric Interest Group: Stephanie Rager and Heba Shaaban in 2020 and Federico Palacardo, Anum Hussain, Nell Borys, and Paul Young in 2021, and faculty advisors, Drs. Thanakorn Jirasevijinda and Susanna Cunningham-Rundles, on organizing and continuing this important pediatric program.

Sallie Permar, MD, PhD
Nancy C. Paduano Professor and Chair
Department of Pediatrics
Weill Cornell Medicine
Pediatrician-in-Chief
NewYork-Presbyterian/Weill Cornell Medical Center

Table of Contents

Faculty Interviews by Students

Interview with Dr. Eduardo M. Perelstein

by Yael R. Stovezky, Class of 2023

Dr. Eduardo M. Perelstein is the Chief of the Division of Pediatric Nephrology in the Department of Pediatrics, Weill Cornell Medicine. He is also an Associate Attending Pediatrician at New York-Presbyterian Hospital and Associate Professor of Clinical Pediatrics at Weill Cornell Medical College. Throughout his medical career Dr. Perelstein has worked with children with a variety of kidney diseases, including end-stage kidney disease requiring dialysis or kidney transplantation, as well as children with high blood pressure and fluid/electrolyte disorders. I had the privilege to speak with Dr. Perelstein about his path in medicine, his fascination with the kidney, and his perspective on working with kids.

Born in Argentina, Dr. Perelstein was gravitating towards a career in medicine since his late teens. Not even seventeen when graduating from high school, he began his journey as a medical student at the University of Buenos Aires Faculty of Medicine in Buenos Aires, Argentina, with no clue as to which field he would specialize in until the very last month of medical school. Pediatrics was his last rotation, he recalls, and it captured him entirely. “I liked the dynamics”, he reflects, “there was a type of movement in pediatrics…I did not think I could do anything else but that”.

It was only after completing his residency in pediatrics at the University of Buenos Aires, that his interest in nephrology took shape. Here too, his decision to subspecialize came late, while already working as a hospitalist. “The kidneys were always something I was passionate about”, he recollects. It was the mystery of homeostasis which he loved revealing, and the morphology of the kidney itself, which he found beautiful and elegant. “It was a combination of physiology and histology”. During his first rotation as a hospitalist, he encountered nephrology and was taken in. Before he moved to the next rotation, he contacted the head of the department and asked, simply, if he could stay.

Dr. Perelstein continued his training in pediatric nephrology at Saint Christopher's Hospital for Children in Philadelphia, Pennsylvania, where he completed a one-year clinical fellowship, and at Weill Cornell Medical College, where he completed two additional years of fellowship training. In 2009, he completed his Masters in Public Health (MPH) at the Johns Hopkins School of Hygiene and Public Health.

As a student very much at the start of my journey in medicine, I am curious to hear about the teachers that left the greatest mark on Dr. Perelstein along the way. Surprisingly, he immediately recalls his patients, residents and medical students. “I probably learned the most from the people I’m supposed to teach”, he comments. “Every question they raise, brings a problem to light, opening a new avenue. When you are answering a question, you realize you yourself had this doubt all along”. The result, he reflects, is enlightening to all, satisfying a shared curiosity.

Completing 47 years of practice in two different countries, Dr. Perelstein reflects on drastic ways in which medicine has changed over time. Information technology revolutionized the field dramatically. A literature review which would take three weeks of daily visits to the library in the early days of his career, can today be completed in only three hours from anywhere in the world. This access to information reshaped not only academic medicine but also clinical care. Needless to mention, this intimate tie between medicine and information technology is as relevant today as ever before.

As we prepare to complete the interview, I learn that Dr. Perelstein is retiring this year. The question I have for him – are there things he knows today which he wished he had known when starting out his medical career? – seems all the more opportune. “There may be many things I would have told a younger me, but none would matter, as I would not have listened”. The subtext, I think, is clear; premature wisdom is unattainable, and mistakes in medicine, in life – are part of a journey and not deviations from it.

When I ask about retirement, Dr. Perelstein smiles and shares with me his exciting plans: “I look forward to gardening, reading, visiting all the museums I never had time for”. As I am about to thank him for his time and congratulate him on his nearing retirement he adds: “and learning Russian!”

Faculty Interviews by Students

Interview with Dr. Demetri Merianos

by Federico Palacardo, Class of 2024

Dr. Demetri Merianos is an Assistant Professor of Surgery in Weill Cornell Medicine's division of Pediatric Surgery and Pediatric Trauma and an Assistant Attending Surgeon at NYP-WCMC. He earned his MD from Rutgers NJMS before completing his general surgery residency in general surgery at the University of Pennsylvania. He completed a two-year research fellowship at Children's Hospital of Philadelphia before completing his clinical fellowship in pediatric surgery at LA Children's Hospital.

I first met Dr. Merianos at a Pediatric Interest Group virtual coffee chat a few months ago with pediatric surgeons, and his passion for education was immediately evident as he shared his experience and advice. Even as he performs over 500 surgical procedures every year, Dr. Merianos still finds the time to act as the director of the surgery clerkship here at WCM and gladly works with any student who expresses an interest in shadowing or just learning more about pediatric surgery.

Dr. Merianos' Journey

When I asked about his path to where he is today, Dr. Merianos spoke of all the crossroads along the way where he was faced with new choices. As a medical student, he was drawn to surgery and began his general surgery residency with an open mind about what he aspired to do within the field. Drawing from his 4th year elective in pediatric surgery, his residency experience, and his enjoyment of working with children, he decided on pediatric surgery and embarked on the next step of his training. After completing the two years of fellowship, he was faced with yet another decision as he applied to jobs. This was an opportunity to find a position that had his desired balance between clinical work, research, and academic responsibilities. His current position at WCM was the happy medium he was looking for and he has been here for almost 8 years now.

Choosing a Specialty

One piece of advice from Dr. Merianos that really stuck with me was: "seek out people who are inspiring in every clerkship and rotation." Beyond the obvious benefits of meeting such individuals, he emphasized that it allows a student to better evaluate their preferences without being drawn to one specialty solely due to the doctors within it. He explained that one would naturally gravitate towards the rotation in which the individuals were more likeable, but this may then turn out to be a field that may not actually appeal to them. Beyond this, I think Dr. Merianos' tip is a testament to the intellectual curiosity that has taken him to where he is today.

Work-Life Balance

Dr. Merianos largely dedicates his time to operating and running the surgery clerkship while doing a few research projects when the opportunity presents. His projects in the past have focused on retrospective clinical outcomes projects that he thinks may have an impact on clinical practice and standards of care in pediatric surgery. He also voiced his openness to working with students who come to him with a question or idea they hope to dig into. His advice about balancing clinical, research, and academic involvement was finding the areas that you are most passionate about and committing yourself to them, rather than trying to do all of them with less depth.

Working with Kids

Surgery, especially in children, carries with itself a number of extra challenges but for Dr. Merianos it is all simply “a privilege.” As someone who has worked with kids and aspires to take care of children myself, I could not help but smile as he spoke of the unique bonds he forms with both the children and the parents. Dr. Merianos especially highlighted the whole new level of trust that he is able to attain with the parents, making sure to dedicate as much time as necessary to answer all their questions and leave no concern unaddressed. I am sure his reassuring demeanor is something those parents truly cherish in those fragile moments of uncertainty.

From our conversation, it is clear to me that the main priorities for Dr. Merianos are his patients and his students. As he logged onto Zoom on a Friday after what was probably a long week of operations, Dr. Merianos was full of excellent advice and a noticeable appreciation of his position as a pediatric surgeon, making a difference in his patients’ lives. His ability to serve as a clerkship director as well as completing such a large load of procedures is truly remarkable and I look forward to crossing paths with him again, this time in person.

Pediatric Interest Group Update

Stephanie Rager and Heba Shaaban, Class of 2023

The global pandemic of the past year has come with many challenges, including the transition to virtual medical education for students here at Weill Cornell. As aligned with our goals of education and exposure, we aimed to bring some of the joy of Pediatrics to the Weill Cornell community despite the difficulties of virtual medical school by continuing our traditional events over Zoom. We believe that continuing to hold these events was all the more important given the lack of clinical opportunities students have had over the past year. We hope that students enjoyed these events and we look forward to the return of in-person opportunities to learn more about Pediatrics in the not-too-distant future!

Spring Match Panel

On April 1st, we had our Spring Match Panel with students who recently matched into Pediatric, Medicine-Pediatric, and Pediatric Neurology residency programs. These admirable students described their recent journey through the residency application process and delivered relevant and useful insight into what their medical school experiences were like as they discovered that Pediatrics was the right career for them. Students also had the opportunity to ask questions about preparing for the Pediatric residency application process. Panelists included:

Peds: John Butterworth, Alexa David, Anzelika Dechnik, Isaac Mayefsky
Peds Neuro: Michelle Yun, Laura Deering
Med-Peds: Kevin Ackerman

Virtual Coffee Chats

The Coffee Chat Program was started last year in order to foster mentorship and introduce students to research and clinical Faculty in Pediatrics as they chat over a cup of coffee or tea. The main goals of the program are to introduce students to the excellent Pediatric faculty at Weill Cornell and to expose students to the various types of careers that are possible within Pediatrics. This year, we are grateful to have been able to speak with:

- Dr. Kowalsky, Pediatric Emergency Medicine (December 8, 2020)
- Dr. Chien and Dr. Tsou, Pediatric Gastroenterology (October 2, 2020)
- Dr. Sheth, Pediatric Hematology/Oncology (May 14, 2019)
- Dr. Gerber, Pediatric Emergency Medicine (April 29, 2019)

Pediatric Research Day

We are also excited for the tradition of Peds Research Day to be continuing virtually on March 10th this year! A special thanks to the new Pediatric Interest Group leaders from the Class of 2024, Nell Borys, Anum Hussain, Federico Palacardo, and Paul Young, for all of their work helping to make this possible. Keep an eye out for more exciting events from them later in the semester as well.

We wish everyone a happy and healthy rest of 2021!

Pediatric Interest Group Research Day Abstracts

Abstracts by medical student investigators submitted for inclusion in the journal and abstracts presented on March 10th 2021 in the Pediatric Research Day forum.

A Preliminary Look at the Role of Early Diagnostic Imaging in the Era of Endoscopic Suturectomy

Kyle Zappi[1] and Caitlin E. Hoffman, MD[2]

[1]Weill Cornell Medical College, Class of 2024
[2]Department of Pediatric Neurosurgery, Weill Cornell Medicine, New York, NY

Objective: Endoscopic suturectomy for craniosynostosis is optimal for younger children, typically under 4 months of age. Given the need for earlier diagnosis since the advent of endoscopic suturectomy, we sought to characterize the role that diagnostic imaging has played in early identification of surgical candidates.

Methods: We reviewed a retrospective cohort of 111 children with a diagnosis of single-suture synostosis undergoing either primary endoscopic suturectomy or open calvarial reconstruction at our institution from 1998-2018. Rates of preoperative diagnostic x-ray and CT were stratified by surgical management (endoscopic vs. open repair) and historical era (1998-2010 vs. 2011-2018).

Results: Of 111 total patients, 31 underwent endoscopic surgery and 80 underwent open surgical repair. Median age at surgery (3.1 vs. 6.9 months; $P < 0.001$), median days from presentation to surgery (28.5 vs. 64.5; $P < 0.001$) and median days from preoperative imaging to surgery (38.5 vs. 78.0; $P < 0.01$) were significantly lower for endoscopic patients. However, there was no difference in the proportion of endoscopic and open surgery patients receiving preoperative imaging before (25.8% vs. 35.9%; $P = 0.37$) or after (22.6% vs. 23.1%; $P > 0.99$) neurosurgical assessment. There was also no difference in the time between presentation and preoperative imaging (1.0 vs. 4.5 days; $P = 0.33$). Stratifying by epoch, there was no difference in rates of preoperative imaging between the old and new epochs (66.7% vs. 54.4%; $P = 0.34$).

Conclusions: Although earlier diagnosis of craniosynostosis is preferred when considering candidates for endoscopic repair, there has not been a coinciding increase in diagnostic X-ray or CT use at our institution. Although endoscopic suturectomy patients are undergoing surgery with less latency after imaging, they are not being identified preoperatively by imaging more frequently than open surgery patients. Multi-institutional studies with larger cohorts will help determine whether this trend is widespread.

Evaluation of the Weill Cornell Medicine Pediatric Inflammatory Bowel Disease Transition and Transfer Experience

Prithvi Mohan[1] and Kimberley Chien, MD[2]

[1]Weill Cornell Medical College, Class of 2021
[2]Department of Pediatric Gastroenterology, Weill Cornell Medicine, New York, NY

Introduction: Transition care services in pediatric Inflammatory Bowel Disease (PIBD) have been deemed a major priority by pediatric gastroenterologists worldwide. However, evidenced-based interventions are rare, and the majority of literature has focused on recommendations by IBD experts and gastroenterologists' experiences. The goal of this study was to evaluate PIBD patients' perspectives regarding their experience during the transition period and event of transfer to the adult gastroenterologist (AGI).

Methods: Former Weill Cornell PIBD patients were recruited and sent a 23-item electronic survey regarding their transition, and descriptive statistics were generated to describe the study population and patients' transition care experiences.

Results: Fourteen former PIBD participants completed the survey, and overall, 78% felt that they were adequately prepared for transfer to their AGI and were satisfied with their transition care process. Our survey demonstrated that what is most paramount to patients' experience is their primary pediatric GI doctor. It is through this relationship where information was disseminated that patients felt most prepared and most satisfied with their transition to adult gastroenterology.

Conclusions: Insight into the experience of former PIBD patients is important in developing best transition care practices for our PIBD patients. It ensures that we provide the best possible care to our pediatric IBD patients and reassures them as they assume responsibility for their own IBD care.

Investigating the Relationship Between the Neonatal Gut Microbiome and Serotonin Biosynthesis

Stephanie Rager[1] and Melody Zeng, PhD[2]

[1]Weill Cornell Medical College, Class of 2023
[2]Weill Cornell Drukier Institute for Children's Health, Department of Pediatrics, Weill Cornell Medicine, New York, NY

Background/Significance: Normal feeding and digestion are essential to the growth and development of newborns. However, gastrointestinal complications such as meconium plug syndrome, feeding intolerance, and necrotizing enterocolitis are common in preterm neonates. Such conditions may lead to repeated surgical procedures, malabsorption syndromes, and may be incompatible with life. Neurotransmitters that regulate gut motility, such as serotonin (5-HT), are necessary for proper gastrointestinal function, yet little is currently known regarding the molecular mechanisms that underlie the biosynthesis of neurotransmitters in early life. Previous mouse studies in the Zeng lab have revealed an increased production of 5-HT in the neonatal gut compared to the adult gut and a critical role for the gut microbiome to induce 5-HT in the neonatal gut. This current study aimed to identify bacteria in the gut of neonatal mice that directly induce the biosynthesis of serotonin in the gastrointestinal tract.

Methods: The luminal contents from the small intestine (SI) of day-14 wild-type neonatal mice were cultured on 3 types of agar plates and grown in anaerobic and aerobic conditions for isolation of individual bacterial colonies. Supernatants from each bacterial isolate were screened for their ability to induce TPH1 and MAOA in HT-29 cells. RNAs were extracted from HT-29 cells 24 hours after incubation with each bacterial supernatant, and cDNAs made from the RNA were used for quantitative PCR (qPCR) to measure the expression of TPH1 and MAOA. Based on qPCR results, bacteria found to consistently up-or down-regulate TPH1 or MAOA across samples were re-cultured (14 isolates) and bacterial DNA was isolated for amplification of the 16S rRNA gene. The PCR amplicons were further purified and sent for Sanger Sequencing (GENEWIZ). NCBI Blast was used to confirm the bacterial identities of these isolates. Bacteria that induced a high TPH1: MAOA ratio in HT-29 cells, and thus are likely to promote induction of 5-HT, were subsequently tested in an in vivo setting by transplantation into nursing germ-free dams via oral gavage 2 days postpartum. Biological offspring co-housed with gavaged dams were sacrificed after 14 days, and TPH1, MAOA, and 5-HT levels in the intestine were measured by qPCR and ELISA.

Results: Thirty-seven bacterial isolates were obtained and cultured from the SI of d14 neonatal mice (18 anaerobic, 19 aerobic). qPCR revealed the presence of 22 bacterial isolates that up-regulated TPH1 compared to MAOA (net synthesis of gut serotonin), and 15 isolates that up-regulated MAOA compared to TPH1 (net degradation of serotonin). 14 bacterial isolates were selected for sequencing of the 16S rRNA gene.

Four of the isolates found to up-regulate TPH1 were identified as Enterococcus gallinarum, 2 as Staphylococcus xylosus, and 3 as Pastruella caecimuris. Of the bacterial isolates found to down-regulate TPH1 compared to MAOA, 2 were identified as Enterococcus faecalis, 1 as Streptococcus acidominumus, and one as Pastruella caecimuris. In the in vivo mouse study, mice gavaged with pure E. gallinarum died prior to 14 days, suggesting high virulence of this E. gallinarum. Mice colonized with S. xylosus alone (n=6) were found to have higher ratios of TPH1:MAOA expression in their SI compared to mice colonized with E. faecalis (n=6). This is in

accordance with qPCR results from the in vitro assay, though this difference was not significant ($p = 0.06$).

Conclusions: These preliminary results support a critical role for gut bacteria in the biosynthesis of 5-HT in the SI of neonatal mice and identify key strains that might be involved in the regulation of 5-HT. In the future, strains or bacterial metabolites that promote intestinal synthesis of 5-HT may be leveraged to promote gut motility or reduce gut inflammation.

Elbow Varus Torque and Ball Velocity Associations in High School and Professional Pitchers with Increased Sagittal Plane Trunk Tilt

Joseph Manzi[1] and Joshua S. Dines, MD[2]

[1]Weill Cornell Medical College, Class of 2022
[2]Orthopedic Surgery, Sports Medicine Institute, Hospital for Special Surgery (HSS), New York, NY

Background: Excessive sagittal plane trunk tilt is thought to increase thrust in the anterior drive towards home plate, transferring energy from the trunk to the distal upper extremity and ultimately generating greater pitch velocity. However, accentuating this motion has also been implicated in increased risk of upper extremity joint loading in baseball pitchers.

Objective: To identify potential associations between sagittal plane trunk tilt and pitch velocity and elbow varus moment in high school and professional baseball pitchers.

Methods: Professional and high school pitchers were instructed to throw fastballs in a simulated game setting while being evaluated with motion capture(480Hz). Sagittal trunk tilt motion throughout the pitching cycle was compared between cohorts. To assess the effects of sagittal plane trunk tilt on ball velocity and elbow varus torque(EVT), linear mixed effect models were created.

Results: Professional pitchers(n=100) achieved greater sagittal trunk tilt excursion throughout the pitch motion (68.0±11.4 vs.62.5±11.0°, p=0.004). For every 10° increase in sagittal trunk tilt at ball release(BR) for high school pitchers, ball velocity increased by 0.34m/s (B=0.097, β=0.025, p=0.025) or 1.1% average ball velocity while EVT increased by 0.07% BWxBH (B=0.007, β=0.086, p=0.016) or 1.7% average normalized EVT. Increased positive, sagittal plane trunk tilt was significantly associated with greater pitch velocity and elbow varus torque for both professional and high school pitchers. Peak EVT estimates were persistently more pronounced than ball velocity, suggesting no specific timepoint may provide a ball velocity benefit while concomitantly minimizing EVT.

Conclusions: Both high schooler and professional pitchers should consider this trade-off, which may influence elbow injury risk, when engaging in higher degrees of positive, sagittal plane trunk tilt. When comparing populations, professionals had greater sagittal trunk tilt excursion compared to high school pitchers, a parameter that may be reflective of a pitcher's trunk range of motion (ROM). Decreased sagittal plane trunk tilt ROM has been implicated as a risk of lower back pain, theorized to increase forces directly transmitted to the lumbar spine, potentially placing pitchers at risk of a lower back injury. Therefore, emphasizing training that improves a pitchers lumbopelvic control may potentially provide a protective benefit for this population.

Pitch Timing in Professional and High School Pitchers

Joseph Manzi[1] and Joshua S. Dines, MD[2]

[1]Weill Cornell Medical College, Class of 2022
[2]Orthopedic Surgery, Sports Medicine Institute, Hospital for Special Surgery (HSS), New York, NY

Background: Understanding the relationship between temporal kinematic phases throughout the pitch cycle and joint loading may improve our understanding of optimal pitching mechanics, contributing to injury prevention in baseball pitchers.

Objective: To investigate the temporal kinematic phases of the pitching motion and its potential association with ball velocity and kinetic measures of the throwing arm in high school(HS) level baseball pitchers.

Methods: High School(HS) level baseball pitchers (n=54) were evaluated throwing 8-12 fastball pitches with 3D motion capture cameras (480 Hz). Four distinct phases of the pitching motion were evaluated based on timing of segmental angular velocities: 1) Foot-Pelvis, 2) Pelvis-Torso, 3)Torso-Elbow, and 4)Elbow-Ball. Peak elbow varus torque, shoulder internal rotation torque, and shoulder distraction force were also calculated and compared between playing levels using Two-Sample t-Test. Linear mixed effect models with compound symmetry covariance structures were used to correlate pitch speed and the kinetic outcomes of interest with the distinct temporal phases of the pitching motion. Results: Shorter time spent in the earlier phases of the pitching motion was significantly associated with greater ball velocity for pitchers (Foot-Pelvis, β=-6.36 and β=-11.1, respectively; Pelvis-Torso, β=-6.4 and β=-11.4, respectively), while also associated with increased shoulder proximal force (Pelvis-Torso, β=-76.3 and β=-77.5, respectively). Decreased time in Elbow-Ball correlated with greater shoulder proximal force (β=-1150 and β=-645, respectively) with no significant correlation found for ball speed (p=0.309, p=0.874 respectively).

Conclusions: Maximizing performance measures like ball velocity while minimizing joint loading of the shoulder and elbow may be achieved with adjustments in temporal phase shifts in the pitching motion. In HS pitchers, decreased time spent in earlier phases of the pitching motion was associated with increased ball speed, shoulder distraction force, and shoulder internal rotation torque. Decreased time spent in later phases of the pitching motion was associated with increased shoulder distraction force with no major gains in ball speed, suggesting adjustment to this later portion of the pitching motion may play a theoretical role in injury prevention, without sacrifice of performance metrics.

Higher Incidence of Aggressive Functional Adenomas in Pediatric Patients: Case Series and Systematic Review

Alexander P Kelly BA[1], Jeffrey P. Greenfield MD PhD[2], Georgiana A. Dobri MD[2], Theodore H. Schwartz MD[2]

[1]Weill Cornell Medical College, Class of 2023
[2]Department of Neurological Surgery, Weill Cornell Medicine/New York Presbyterian Hospital, New York, NY

Introduction: Pediatric pituitary adenomas (PAs) are rare, comprising approximately 3% of intracranial neoplasms in children. Thus, a comprehensive understanding of their manifestation and treatment is lacking. This study aims to evaluate presenting characteristics of pediatric PA and outcomes after endoscopic endonasal transsphenoidal surgery (EETS).

Methods: A retrospective chart review was conducted for pediatric patients who underwent EETS for PA at NewYork-PresbyterianWeill Cornell Medical Center from 2005-2020. Information regarding demographics, adenoma properties, and outcomes was reviewed. A systematic literature review was carried out to compare outcomes of endoscopic and microscopic approaches.

Results: Eight patients were identified (mean age 14.5 +/- 2.5 years), and 7 (87.5%) had functional adenomas (FPAs). 6 of the FPAs (85.7%) were prolactinomas and 1 (14.3%) was a somatotropinoma. Maximum adenoma diameter ranged from 1.3-5.1 cm, with a median size of 1.6 cm. KI-67 Labeling Index was >3% in 3/6 patients (50%) with available data. Gross total resection (GTR) and biochemical remission were achieved in 7 (87.5%) and 4 (57.1%) patients, respectively. Post-operative complications were documented in 7 cases (87.5%), and included diabetes insipidus, hypopituitarism, sinusitis, weight gain, meningitis, and hydrocephalus. Systematic literature review of 105 microscopic and 172 endoscopic pediatric cases revealed high frequency of FPAs (83.4%). Rates of GTR were similar between groups (82.4% vs 84.8%), and biochemical cure was slightly higher in the microscopic group (75.8% vs 65.2%).

Conclusions: Compared to adults, pediatric patients have higher incidence of aggressive and hormone-secreting PA. EETS is efficacious in the treatment of pediatric PA despite restrictive anatomy. However, hormonal complications are relatively higher in children, possibly due to heightened tumor aggressiveness. Results of endoscopy do not appear to be superior to those of microscopy, perhaps due to smaller average size of FPAs.

Pediatric Delirium and All-Cause PICU Readmissions within One Year: A Retrospective Analysis

Tara Pilato[1] and Chani Traube, MD[2]

[1]Weill Cornell Medical College, Class of 2022
[2]Department of Pediatric Critical Care Medicine at Weill Cornell Medicine/NYP, New York, NY

Background: Delirium in critically ill children is associated with increased in-hospital morbidity and mortality [1]. Little is known about the lingering effects of pediatric delirium in survivors after hospital discharge.

Objective: The primary objective of this study was to determine whether children with delirium would have a higher likelihood of all-cause pediatric intensive care unit (PICU) readmission within one calendar year, when compared to children without delirium.

Design/Methods: Retrospective cohort study in a tertiary care, mixed PICU at an urban academic medical center. Every child was screened for delirium daily throughout the PICU stay. Index admissions included all children admitted between September 2014 and August 2015. For each index admission, any readmission occurring within one year after PICU discharge was captured. Bivariate analyses compared patients readmitted within one year of discharge to those not readmitted. A multivariable logistic regression model was constructed to describe adjusted odds ratios for readmission. The primary exposure variable was number of delirium days.

Results: Amongst 1145 index patients, 166 children (14.5%) were readmitted at least once. Complex chronic conditions (CCC), increased severity of illness, longer PICU length of stay, need for mechanical ventilation, age <6 months, and a diagnosis of delirium were all associated with subsequent readmission. After controlling for confounders, critically ill children who experienced greater than two delirium days on index admission were more than twice as likely to be readmitted (aOR 2.2, CI 1.1-4.4, p=0.023). A dose-response curve was noted, as children with longer duration of delirium had increased odds of readmission.

Conclusions: In this cohort, delirium duration was an independent risk factor for readmission in critically ill children. By decreasing delirium rates, we may be able to decrease the need for PICU readmission.

Reference:
[1] Traube C, Silver G, Gerber LM, Kaur S, Mauer EA, Kerson A, et al. Delirium and mortality in critically ill children: Epidemiology and outcomes of pediatric delirium. Crit Care Med 2017;45:891–8. https://doi.org/10.1097/ccm.0000000000002324.

Mentored Projects in Pediatric Medicine

The projects listed below are current mentored medical student project studies at WCM (2020-2021)

Medical Student Investigator		Project ■□	Mentor*
1■	Amber Hamilton,	Core Psychosocial Issues for Children and Adolescents in the Context of Limb Lengthening and Reconstruction Surgery Treatment	S. Robert Rozbruch, MD, Peter Fabricant, MD, MPH, HSS, WMC
2■	Alexander Kelly	Normal Humeral Head Ossification in Pediatric and Adolescent Shoulders can Mimic Hill-Sachs Lesions: A Magnetic Resonance Imaging-Based Study	Peter Fabricant, MD, MPH, HSS, WCM
3□	Kiara Kaylor	Blood Loss During Placenta Accreta Delivery with Use of Iliac Artery Balloon Occlusion	J, Pick, MD, K.S. Lee, MD, WCM
4□	Ethan Zhao	Relationship between the Gut Microbiota and Tacrolimus Drug Metabolism in Kidney Transplantation	John Lee M.D. MS, WMC
5■	Kimberly A. Bogardus	Ovarian Function After Chemotherapy-Based Cytoreductive Regimens in Female Childhood Transplant Survivors	Danielle N. Friedman, MD*, WCM, MSKCC
6■	Eric T. Caliendo	Acute imaging findings predict recovery of Cognitive and Motor Function following Inpatient Rehabilitation for Pediatric Traumatic Brain Injury: A Pediatric Brain Injury Consortium Study	Sudhin Shah, MD, WCM
7□	Maya Berit Feldman,	Decisions of Young Women with Breast Cancer Regarding Fertility Preservation before Cancer Treatment and Family Building after Treatment	Shari Goldfarb, MD, MSKCC, WCM
8■	Kimberly Nicole Forlenza,	Usage of Pre-Operative Plasma and Effects on Peri-Operative Bleeding in a Pediatric Population	Marianne Nellis, MD*, WCM
9■	Pooja Shah	Pediatric Epilepsy Learning Healthcare System Quality of Life (PELHS-QOL-2): A Novel QOL Prompt for Children with Epilepsy	Zachary Grinspan, MD*, WCM

10■	Annie Yau	Legacy Patient-Reported Outcome Measures Can Be Reliably Translated to PROMIS Domains for Use in Adolescent Spinal Deformity	Peter Fabricant, MD, HSS, WCM
11■	Brian Scott LaGrant	Patterns of Recording Caregiver-reported Infantile Spasms in an Electronic Seizure Diary Compared to Video EEG	Zachary Grinspan, MD*, WCM
12■	Brienne Chloe Lubor	Investigating the Role of EGFL7 in Preeclampsia	Heidi Stuhlmann, PhD*, WCM
13■	Rachel Arnesen,	Multi-Center Assessment of Sturge-Weber Syndrome: A Retrospective Study of Aspirin Usage and Variations in Care	Zachary Grinspan, MD*, WCM*
14■	Kyle Zappi**	A Preliminary Look at the Role of Early Diagnostic Imaging in the Era of Endoscopic Suturectomy	Caitlin E. Hoffman, MD*
15■	Prithvi Mohan**	Evaluation of the Weill Cornell Medicine Pediatric Inflammatory Bowel Disease Transition and Transfer Experience	Kimberley Chien, MD*
16■	Stephanie Rager**	Investigating the Relationship Between the Neonatal Gut Microbiome and Serotonin Biosynthesis	Melody Zeng, PhD*
17■	Joseph Manzi**	Elbow Varus Torque and Ball Velocity Associations in High School and Professional Pitchers with Increased Sagittal Plane Trunk Tilt	Joshua S. Dines, MD
18■	Joseph Manzi**	Pitch Timing in Professional and High School Pitchers	Joshua S. Dines, MD
19■	Joseph Manzi**	Shoulder Anterior Force in Professional and High School Pitchers	Joshua S. Dines, MD
20■	Alexander P Kelly**	Higher Incidence of Aggressive Functional Adenomas in Pediatric Patients: Case Series and Systematic Review	J. P. Greenfield MD, PhD*, G.A. Dobri MD, T.H. Schwartz MD
21■	Tara Pilato**	Pediatric Delirium and All-Cause PICU Readmissions within One Year: A Retrospective Analysis	Chani Traube, MD*

KEY: **Mentor* Pediatric Faculty**
Project ■ Pediatric patient-related; □ Relevant to Pediatric medicine
Pediatric Interest Group Research Day**

Pediatric Initiatives in Research and Learning

The Heads Up! Literacy Program

A Project of the Weill Cornell Medical College Department of Pediatrics

Economic disadvantage and limited parental education mean that children born into poverty are susceptible to delays in language development. These children routinely lag behind their peers before pre-school or kindergarten even begins. In most cases, this gap continues to widen in elementary and middle school as children with poorer educational foundations fall further below school standards.

Weakness in language and reading skills can lead to poorer educational and health outcomes, such as school failure, low self-esteem, troubled behavior, and substance abuse. In contrast, recent studies have shown that reading aloud to children from early on in life has positive effects on children's language and pre-literacy skills.

In an effort to improve early literacy, the Heads Up! Pediatric Literacy program has initiated an intervention mediated by pediatric primary care physicians. Doctors are the professional constituents with the most access to children and parents before school begins. By having physicians alert parents to the need to read to their young children—and by giving an age-appropriate book as part of the physical exam—we make the promotion of early language and literacy development a standard part of primary pediatric care.

Beyond encouraging language development and school readiness, books can also be used for assessment in the exam room. Books can help physicians see whether a four-month-old reaches for objects or if a child who moves to accept a book has a normal gait. In addition, at WCMC, trained volunteers help children select more books and conduct parent outreach in the waiting room.

Because we believe deeply in the mission of promoting child literacy, we are working hard to keep this program going as strong as ever through continued involvement with volunteers as well as book donations.

Program Contact Information: Hovig Shamamian, hos2005@med.cornell.edu

The Compass Program

THE COMPASS PROGRAM

A safe space for youth navigating their gender experience

We provide services for gender-diverse children and LGBTQ+ youth including primary health care, family support, mental health counseling, sexual health counseling, and gender-affirming hormone treatment in a safe, welcoming and nonjudgmental space.

For patients enrolled in Medicaid up to 19 years old

To schedule an appointment or for more information contact Zoe Pinter, LMSW at 212-746-3042

Located at Helmsley Tower 505 East 70th Street, 5th Floor

NewYork-Presbyterian

Weill Cornell Medicine

Opportunities in Medical Education and Service Learning

The Komansky Children's Hospital Family Advisory Council

The Komansky Children's Hospital Family Advisory Council (KCH FAC) is a group of 31 dedicated parents and family members of pediatric patients who are committed to working together as equal partners with hospital staff and administration to provide patient-and family-centered care to all patients since 2007. KCH FAC has four areas of focus:

Quality and Patient Safety/Advisors: KCH FAC members are active on numerous Departmental and Hospital Committees, including the Quality and Patient Safety Council. KCH FAC members have direct impact and influence on policies, programs, and practices which affect the care and services of children and their loved ones. The Komansky Children's Hospital is part of the Solution for Patient Safety (SPS) with over 140 hospitals working together to eliminate harm in pediatrics. KCH FAC members use a patient-and family-centered approach to address current priorities in health care specifically in reducing readmission, decreasing infections and preventable medication errors, improving medication management, providing safe care transitions, and improving cost efficiency.

Medical Education/Family Faculty: Working in close collaboration with medical staff, we co-develop and host programs to educate medical students, residents and nurses on the principles of family-centered care. KCH FAC parents are afforded the opportunity to share their lived experiences and opinions in order to contribute from a family point of view. Family Faculty works closely with Drs. Jennifer DiPace and Thanakorn Jirasevijinda, and Nursing Educator Mary Mahoney.

Patient Experience/Support Group: A child's stay in the hospital can often be a stressful and difficult time. Our members, through sharing their lived experiences, help guide other families and provide them with emotional support. We are committed to creating initiatives that support families and patients including parent/caregiver lunches, teas and dinners, and celebrating with patients/families at one of our many holiday events.

Diversity Equity and Inclusion (DEI): Initiatives for this newly formed area of focus will include an increase in the number of bilingual members participating in support events, the creation of virtual and in-person forums post-COVID, and collaboration with Family Faculty on a DEI-focused case.

The Komansky Children's Hospital Family Advisory Council has partnered with Quality Improvement Research Team "Improving Pediatric Patient-Centered Care Transitions (IMPACT) to improve transitions care for patients with medical complexity who depend on technology for daily functioning. This technology includes tracheostomy, feeding tubes, indwelling central venous lines, and ventriculoperitoneal shunt. We have developed the Simulation-based Discharge Program that has 2 parts: 1) Simulation-based education where caregivers can learn about tracheostomy care on mannequins 2) Parent-to-Parent Support Program is a peer to peer program that provides emotional support to families of children at The Komansky Children's Hospital in person and via a HIPAA secured telephone platform. In addition to participating in the Simulation Discharge Program as described above, this program provides support to families with children with Autism, Cancer, Cerebral Palsy, Down Syndrome, Diabetes, Leukemia, Neuroblastoma, Pancreatitis, Seizure Disorder, and Sepsis.

Program Faculty Mentor: Mariella Guerra, Mag9152@nyp.org

Health Professions Recruitment & Exposure Program (HPREP)

The Health Professions Recruitment & Exposure Program (HPREP) is part of the Pipeline Mentoring Institute of the Student National Medical Association (SNMA). HPREP aims to expose high school students from underrepresented minorities to science, medicine, and the health professions. The overarching goal is to encourage minority students to pursue a career in medicine by giving them meaningful exposure to the health field. During the three-month after school program, the students attend a variety of lectures, participate in an anatomy lab dissection, receive assistance on their college application and essay, hear about the intersections of medicine and other disciplines, and build a lasting relationship with a medical student mentor. This year we anticipate around 100 high school students to engage roughly 60 medical students from across all classes. HPREP has a rich history in the community, with alumni often coming back to speak on the program. This program began here at Weill Cornell and has subsequently spread to many other medical colleges around the country.

Student Leadership: Madison Rex (mrr2007@med.cornell.edu)

Faculty Advisors: Dr. Cynthia Isedeh (cyi9002@med.cornell.edu), Dr. Nancy Lee (njl4001@med.cornell.edu), Dr. Carolyn Ochoa (ceo9015@med.cornell.edu)

Weill Cornell Youth Scholars Program (WCYSP)

The main purpose of the Weill Cornell Youth Scholars Program (WCYSP) is to expose students of underprivileged and underrepresented backgrounds, especially from inner-city high schools, to the substantial educational resources and opportunities at Weill Cornell Medical College and NewYork-Presbyterian Hospital/Weill Cornell Medical Center. Many of these high schools have exceptionally high drop-out rates that coincide with low percentages of graduates going on to attend a four-year university. By developing early experiences in medicine, students can develop appropriate attitudes towards their education, interpersonal skills, and, importantly, confidence in themselves to succeed academically.

The WCYSP curriculum is designed to educate, inspire, and prepare participants for personal and professional success. We seek to address some of the weaknesses that prevent many inner-city students from performing well at the college level through an innovative format that emphasizes critical reading and writing. Students attend lectures, given by WCMC students, in physiology, anatomy, and the basic medical sciences.

Our daily Problem Based Learning (PBL) sessions provide a forum for youth scholars to interact with one another and learn the value of collaboration. All high school students that completed the program reported that it had a significant impact on their personal motivation to pursue a career in science or medicine and are more motivated to take more challenging courses in high school. Moreover, all of the students who graduated from the program went on to college, and most of those now in college major in science or other pre-medical tracks. Weill Cornell medical students, residents and attending physicians serve as mentors and teachers in the program. Volunteer teachers can choose one or more topics and are given lecture notes and Powerpoint slides that

are prepared in advance to maintain consistent quality. Alternatively, volunteer teachers may use their own teaching materials for their particular topic with proper review in advance. The program runs for four weeks every July from Tuesday to Friday. Typically, each lecturer will give one or two one-hour lectures, but can choose to volunteer more of their time. We also recruit new leadership every year to plan the next summer's program under the guidance of leaders from the previous year.

Student Contact: Daniel Kramer, dkramer@mail.rockefeller.edu

Health for Life

Health for Life is a program run by the NYP Department of Pediatrics that works with overweight children. A team of pediatricians, fitness specialists, social workers, nutritionists, and medical student volunteers help children and teens ages 7-18 learn about how to lead a healthier life. The program consists of a clinical and group component. Patients are seen individually through in person or virtual clinic appointment where medical, nutrition, and activity counseling is tailored to meet their needs. In the group program, which is now all virtual, parents participate in a 10-week nutrition education and support group led by the H4L dietitian. Children are also invited to join hour long exercise classes once a week which focus on having fun while engaging in physical activity and teaching participants how to incorporate activity into their daily lives. Medical students have the opportunity to form relationships with children and their parents, while also serving as role models and having a great time!

Faculty Advisor: Jane Chang, MD Jac9009@med.cornell.edu

Program Coordinator: Robyn Turetsky, MS, RDN, CDN rkt9001@nyp.org

Magic Aid

MagicAid is a club devoted to providing "magic therapy" to pediatric patients in the hospital. Medical students will visit patients in various pediatric wards, performing and teaching magic tricks to the patients and their families. This exciting service organization serves as a unique way for medical students to positively impact the patients' experiences and well-being. No experience with magic necessary—the effects are fun and easy to learn!

Opportunities in Community Outreach, Support, and Service

Camp Phoenix

Every year, nearly one million American children suffer burn injuries. Fortunately, advancements in trauma and resuscitative care have improved the treatment and survival of these young patients. But despite these medical and surgical advances, the psychosocial care of pediatric burn victims continues long after discharge. These children often return home with scars as permanent reminders of their trauma, and the aftermath of surviving a serious burn usually includes considerable stress, diminished self-esteem, and difficulty creating positive social relationships. Camp Phoenix provides a safe environment for pediatric burn survivors and their siblings to interact with peers, share their experiences, and establish a system of support. Many of Camp Phoenix's campers come from low socio-economic backgrounds, and this is often their only means to experience a summer camp.

Camp Phoenix, the first burn camp in the United States run by medical students, was founded in 2000 by Paul Mullan, a 2004 Graduate of Weill Cornell Medical College. Since then, Camp Phoenix has expanded and sponsors three single day events and one overnight camping trip each year. Past events have been held at the Intrepid Museum, the Bronx Zoo, Lucky Strikes Bowling, Sony Wonder Technology Lab, Chelsea Piers, New York Knicks games, the Museum of Natural History, and NYC Firehouses, amongst many others. We have worked with over 250 children at these events, with an average of 30 campers and 25 volunteer counselors at each event. Camp Phoenix activities are designed to build confidence, emphasize teamwork, initiate friendship, and maximize fun.

The overnight camping trip is especially memorable for both campers and counselors. Camp typically involves three days at Camp Kinder Ring in Hopewell Junction, NY. Campers participate in activities such as swimming, tie-dye, sports, and field games. For many of our campers, this is their first time away from home and outside of an urban setting. Campers are divided into cabins, where they work together and develop a deep sense of community and camaraderie.

Given the COVID-19 pandemic, the 2020 camp unfortunately had to be cancelled. For 2021, we are keeping an eye on guidelines and recommendations from both NYS and Weill Cornell to plan either a virtual or hybrid camp this coming June. For the virtual component, we are planning to mail packages to each of the campers with treats and camp supplies such as craft kits, T-shirts, and games. Among the activities we have planned are a scavenger hunt, a talent show, and small group activities to play games and complete art projects together. For a possible in-person component, we are planning a day-trip to a nearby campground for socially distanced games and bonding activities.

As we recognize the particular need for connection and community for our campers given remote schooling and fewer opportunities to connect with peers this year, we are expanding our efforts to recruit campers and plan an engaging, community-building, and memorable weekend for our campers—regardless of the medium.

In addition to helping campers and their families, Camp Phoenix offers a unique educational experience for the medical students involved. Our volunteers serve as mentors for children with a range of medical and psychosocial issues, allowing them to hone their skills as leaders, role models, and caretakers. Positive experiences at the day events and overnight weekend camp have inspired many volunteers to develop interests in pediatrics, burn surgery and psychiatry.

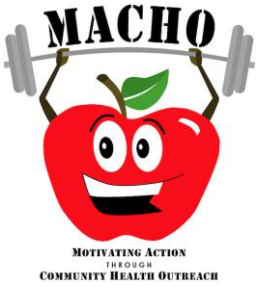
Camp Phoenix also aims to give future physicians opportunities outside of the classroom to better appreciate the art of compassionate and empathetic care for complex patients. Our shadowing program allows medical students to spend time with the pediatric burn team at NYP. Students learn about the inpatient and surgical experiences of our campers, as well as the relevant psychosocial issues to consider. Camp Phoenix creates a platform to educate all interested students about what our campers experience during the rehabilitation phase of their burn care, while also providing unique insight from experts in the field.

Student Leadership: Eric Mai (erm4008@med.cornell.edu), Hudson Lee (hsl4002@med.cornell.edu)

Faculty Advisor: Dr. Michael Alfonzo (mia2016@med.cornell.edu)

MACHO

Motivating Action through Community Health Outreach (MACHO) is a Weill Cornell Medical College student led, community centered response to the alarmingly increasing rate of childhood obesity, particularly within minority and socioeconomically disadvantaged communities. The program partners with Public School 83 in East Harlem and aims to teach adolescents about nutrition, exercise and wellness through the lens of personal responsibility and practical tools for success in life. Although the immediate focus of our program is on healthy choices related to nutrition and exercise, MACHO's participants learn values and skills that can be applied to many other endeavors in life. By empowering our youth to lead healthy lives, we hope they can motivate and inspire others in their community to do the same.



Student Leadership: Anum Hussain (akh4002@med.cornell.edu) and Hannah Hwang (hhh4001@med.cornell.edu)

Faculty mentor: MacKenzi Preston, MD (mnh9003@med.cornell.edu)

Kids in Chronic Care Support (KICS)

KICS is a student-run program with the New York Presbyterian Hospital that creates one-on-one matches between Weill Cornell medical students and children or adolescents currently receiving therapy. The focus of the program is to provide support for the children and their families; it gives the kids an opportunity to form a close, consistent relationship with someone outside of their treatment team. KICS currently works with departments of pediatric neurosurgery and hematology/oncology. KICS leadership personally matches students with patients interested in having a buddy. Once a match is made, the student makes the initial contact with the patient during a clinic visit. After this, buddies can spend time together whenever it is best for both; this can be during hospital visits or outside of the hospital.

For kids, the hospital can be an intimidating place associated with pain, discomfort, and, of course, the terrible effects of chemotherapy. Medical students can help make their treatment experience a little better. Especially in pediatrics, the diagnosis of cancer can have a major impact not only on the patient but also on the patient's family. KICS provides medical students with the opportunity to follow a patient case longitudinally and also to delve into the impact of chronic illness on patients and their families.

Faculty Mentors and Advisors

Erika Abramson, MD, MS
General Academic Pediatrics
Weill Cornell Medicine
err9009@med.cornell.edu

Oleh Akchurin, MD
Pediatric Nephrology
Weill Cornell Medicine
oma9005@med.cornell.edu

Michael J. Alfonzo MD, MS
Pediatric Emergency Medicine
Weill Cornell Medicine
mia2016@med.cornell.edu

Zoltan Antal, MD
Pediatric Endocrinology
Pediatric Diabetes Program
Weill Cornell Medicine
zoa9003@med.cornell.edu

Ardavan Akhavan, M.D
Pediatric Urology
Weill Cornell Medicine
apa9010@med.cornell.edu

Elaine Barfield, MD
Pediatric Gastroenterology& Nutrition
Weill Cornell Medicine
646-962-3869
elb2020@med.cornell.edu

Jennifer Bassetti, M.D.
Medical Genetics
Department of Pediatrics
Weill Cornell Medicine
jab9161@med.cornell.edu

Lauren Blatt, MD
Newborn Medicine
Department of Pediatrics
Weill Cornell Medicine
apa9010@med.cornell.edu

Susan Bostwick, MD
General Academic Pediatrics
Department of Pediatrics
Weill Cornell Medicine
sbbostwi@med.cornell.edu

Farid Boulad, MD
Department of Pediatrics
Memorial Sloan-Kettering
Cancer Center
bouladf@mskcc.org

Sheila Carroll, MD
Pediatric Cardiology
Weill Cornell Medicine
sjc7002@med.cornell.edu

Marisa Censani, MD
Pediatric Endocrinology
Weill Cornell Medicine
mac9232@med.cornell.edu

Catherine Chang, MD
Newborn Medicine
Department of Pediatrics
Weill Cornell Medicine
cah9061@med.cornell.edu

Jane Chang, MD
General Academic Pediatrics
Weill Cornell Medicine
jac9009@med.cornell.edu

Kimberley Chien, MD
Pediatric Gastroenterology and Nutrition
Weill Cornell Medicine
kac9091@med.cornell.edu

Thomas Ciecierega, MD
Pediatric Gastroenterology
Aerodigestive & Motility Centers
Weill Cornell Medicine
thc9032@med.cornell.edu

Lilian L. Cohen, MD
Medical Genetics
Department of Pediatrics
Weill Cornell Medicine
apa9010@med.cornell.edu

Jennifer Cross, MB, ChB.
Child Development
Department of Pediatrics
Weill Cornell Medicine
jfc2001@med.cornell.edu

Christopher Cunniff, MD
Medical Genetics
Department of Pediatrics
Weill Cornell Medicine
cmc9039@med.cornell.edu

Jeffrey Dayton, MD
Pediatric Cardiology
Weill Cornell Medicine
jed9031@med.cornell.edu

Patricia DeLaMora, MD
Pediatric Infectious Disease
Weill Cornell Medicine
pad9003@med.cornell.edu

Jennifer DiPace, MD
General Academic Pediatrics
Weill Cornell Medicine
jed9008@med.cornell.edu

Elizabeth Poole-Di Salvo, MD
Child Development Program
Department of Pediatrics
Weill Cornell Medicine
elp9066@med.cornell.edu

Michael Espiritu, M.D
Newborn Medicine
Department of Pediatrics
Weill Cornell Medicine
mie2005@med.cornell.edu

Diane Felsen, PhD
Pediatric Urology
Department of Pediatrics
Weill Medical Medicine
dfelsen@med.cornell.edu

Alexis Jamie Feuer, MD, MS
Pediatric Endocrinology
Pediatric Diabetes Program
Weill Cornell Medicine
646-962-3442
alf9032@med.cornell.edu

Robert Finkelstein, MD
Pediatric Critical Care Medicine
Weill Cornell Medicine
rof9025@med.cornell.edu

Patrick Flynn, MD
Pediatric Cardiology
Weill Cornell Medicine
paflynn@med.cornell.edu

Katharina Graw-Panzer, MD
Pediatric Pulmonology
Pediatric Aerodigestive Center
Weill Cornell Medicine
Kag9148@med.cornell.edu

Cori Green, MD
General Academic Pediatrics
Weill Cornell Medicine
cmg9004@med.cornell.edu

Daniel W. Green, MS, MD
Clinical Orthopaedic Surgery
Weill Cornell Medicine
Hospital for Special Surgery
greendw@hss.edu

Jeffrey P. Greenfield, MD, PhD.
Pediatric Neurologic Surgery
Weill Cornell Medicine
jpgreenf@med.cornell.edu

Bruce Greenwald, MD
Pediatric Critical Care Medicine
Weill Cornell Medicine
bmgreen@med.cornell.edu

Zachary Grinspan, MD MS
Pediatric Neurology
Weill Cornell Medicine
Zag9005@med.cornell.edu

Michael B. Grody, MD
Child and Adolescent Psychiatry
Weill Cornell Medicine
mbg9005@med.cornell.edu

Neera Gupta, MD
Pediatric Gastroenterology
Weill Cornell Medicine
neg9020@med.cornell.edu

Katherine A. Hajjar, MD
Pediatric Hematology-Oncology
Department of Pediatrics
Weill Cornell Medicine
khajjar@med.cornell.edu

Jin-Young Han, MD, PhD
Pediatric Infectious Disease
Weill Cornell Medicine
jih9033@med.cornell.edu

Duncan Hau, MD
General Academic Pediatrics
Department of Pediatrics
Weill Cornell Medicine
dkh2001@med.cornell.edu

Sherrie Hauft, M.D
Newborn Medicine
Department of Pediatrics
Weill Cornell Medicine
jih9033@med.cornell.edu

Caitlin Hoffman, MD
Pediatric Neurologic Surgery
Weill Cornell Medicine
ceh2003@med.cornell.edu

Ralf Holzer, MD
Pediatric Cardiology
Weill Cornell Medicine
rjh3001@med.cornell.edu

Joy D. Howell, MD
Pediatric Critical Care Medicine
Weill Cornell Medicine
jdh2002@med.cornell.edu

Lisa Cooper Hudgins, MD
Departments of Pediatrics, Medicine &
Surgery, Rogosin Institute
Comprehensive Lipid Control Center
Weill Cornell Medicine
lih2013@nyp.org

Lisa Ipp, MD
General Academic Pediatrics
Weill Cornell Medicine
lsi9001@med.cornell.edu

Thanakorn Jirasevijinda, MD
General Academic Pediatrics
Weill Cornell Medicine
thj2002@med.cornell.edu

Christine Joyce, MD
Pediatric Critical Care Medicine
Department of Pediatrics
Weill Cornell Medicine
clj9014@med.cornell.edu

Shipra Kaicker, MD
Pediatric Hematology-Oncology
Weill Cornell Medicine
clj9014@med.cornell.edu

Ericalyn Kasdorf, M.D
Newborn Medicine
Department of Pediatrics
Weill Cornell Medicine
erk9007@med.cornell.edu

James Killinger, M.D
Pediatric Critical Care
Department of Pediatrics
Weill Cornell Medicine
Memorial Sloan Kettering Cancer Center
ak9023@med.cornell.edu

Barry Kosofsky, MD
Pediatric Neurology
Departments of Pediatrics and Neurology
Brain and Mind Research Institute
Laboratory of Molecular & Developmental Neuroscience
bar2009@med.cornell.edu

Nicole Kucine, MD
Pediatric Hematology/Oncology
Department of Pediatrics,
Weill Cornell Medical College
nik9015@med.cornell.edu

Juhi Kumar, MD, MPS
Pediatric Nephrology
Department of Pediatrics,
Weill Cornell Medicine
juk2013@med.cornell.edu

Jennifer Levine, MD
Pediatric Hematology/Oncology
Weill Cornell Medicine
jel9022@med.cornell.edu

Catherine Lord, PhD
Pediatric Psychology
Center for the Developing Brain
Weill Cornell Autism Research Program
Weill Cornell Medicine
cal2028@med.cornell.edu

David C. Lyden, MD, PhD
Pediatric Hematology/Oncology
Children's Cancer & Blood Foundation Labs
Weill Cornell Medicine
dcl2001@med.cornell.edu

Eric J. Mallack, MD
Department of Pediatrics and Neurology, Center for Neurogenetics
ejm9009@med.cornell.edu
Catherine McGuinn, MD
Pediatric Hematology/Oncology
Weill Cornell Medicine
cam9061@med.cornell.edu

Demetri Merianos, MD
Pediatric Surgery and Trauma
Weill Cornell Medicine
dem9110@med.cornell.edu

Jacob Messing, MD, FAPA
Child and Adolescent Psychiatry
Weill Cornell Medical College
jam9175@med.cornell.edu

Jordan Metzl, MD
General Academic Pediatrics
Department of Pediatrics
Sports Medicine Institute for Young Athletes
Hospital for Special Surgery
metzlj@hss.edu

Barbara Mildrod, MD
Pediatric Psychiatry
Weill Cornell Medicine
bmilrod@med.cornell.edu

Marianne Nellis, MD, MS
Pediatric Critical Care Medicine
Weill Cornell Medicine
man9026@med.cornell.edu

Stephen Oh, MD
Pediatric Surgery and Trauma
Weill Cornell Medicine
pio7001@med.cornell.edu

Karen B. Onel, MD
Pediatric Rheumatology
Hospital for Special Surgery
onelk@hss.edu

Jennie Ono, MD, MS
General Academic Pediatrics
Weill Cornell Medicine
jgo2002@med.cornell.edu

Snezana Nena Osorio, MD
General Academic Pediatrics
Weill Cornell Medical College
snm2001@med.cornell.edu

Virginia Pascual, MD
Gale and Ira Drukier Institute for Children's Health
Department of Pediatrics
Weill Cornell Medicine
vip2021@med.cornell.edu

Aimee Parow, M.D
Newborn Medicine
Department of Pediatrics
Weill Cornell Medicine
aip9008@med.cornell.edu

Eduardo Perelstein, MD, MPH
Pediatric Nephrology
Weill Cornell Medicine
emperels@med.cornell.edu

Jeffrey Perlman, MD
Neonatology
Department of Pediatrics
Weill Cornell Medicine
jmp2007@med.cornell.edu

Shari Platt, MD
Pediatric Emergency Medicine
Weill Cornell Medicine
slp9001@med.cornell.edu

Steven Pon, MD
Pediatric Critical Care Medicine
Weill Cornell Medicine
spon@med.cornell.edu

Dix Poppas, MD
Pediatric Urology
Weill Cornell Medicine
dpoppas@med.cornell.edu

Anjali M Rajadhyaksha, PhD
Pediatric Neurology
Department of Pediatrics,
Weill Cornell Medical College
amr2011@med.cornell.edu

Lisa G. Roth, MD
Pediatric Hematology/ Oncology
Department of Pediatrics
Weill Cornell Medicine
lgr2002@med.cornell.edu

Christine M. Salvatore, MD
Pediatric Infectious Disease
Weill Cornell Medicine
chs2032@med.cornell.edu

Susan Samuels, MD
Pediatric Psychiatry
Department of Psychiatry
sus9079@med.cornell.edu

Tiffany Schumaker, DO
Pediatric Endocrinology
Weill Cornell Medicine
sus9079@med.cornell.edu

Sujit Sheth, MD
Pediatric Hematology/Oncology
Department of Pediatrics,
Weill Cornell Medicine
shethsu@med.cornell.edu

Allison Gorman Steiner, MD
General Academic Pediatrics
Department of Pediatrics
Weill Cornell Medicine
agg9003@med.cornell.edu

Matthew Smith-Raska, MD
Newborn Medicine
Department of Pediatrics
Weill Cornell Medicine
mrs7001@med.cornell.edu

Brooke Ilana Spector, MD
General Academic Pediatrics
Department of Pediatrics
Weill Cornell Medicine
bis9013@med.cornell.edu

Robbyn E. Sockolow, MD
Pediatric Gastroenterology
Weill Cornell Medicine
ros2023@med.cornell.edu
Aliza Solomon, DO
Pediatric Gastroenterology
Weill Cornell Medicine
als9047@med.cornell.edu

Mark M. Souweidane, MD
Pediatric Neurologic Surgery
Departments of Pediatrics and
Neurologic Surgery
Weill Cornell Medicine
mrs7001@med.cornell.edu

Nitsana A. Spigland, MD
Pediatric Surgery and Trauma
Weill Cornell Medicine
mrs7001@med.cornell.edu

Shaun A. Steigman, MD
Pediatric Surgery and Trauma
Weill Cornell Medicine
shs9161@med.cornell.edu

Heidi Stuhlmann, PhD
Department of Cell & Developmental
Biology
Department of Pediatrics
Weill Cornell Medical College
212-746-6156
hes2011@med.cornell.edu

Karen Su, MD
Pediatric Endocrinology
Weill Cornell Medicine
klin@med.cornell.edu

Chani Traube, MD
Pediatric Critical Care Medicine
Department of Pediatrics,
Weill Cornell Medicine
chr9008@med.cornell.edu

Yaffa Vitberg, MD
Pediatric Emergency Medicine
Weill Cornell Medicine
ymv9001@med.cornell.edu

Haviva Veler, MD
Pediatric Sleep & Breathing Disorder
Center
Weill Cornell Medicine
klin@med.cornell.edu
Mary Vernov, MD
Newborn Medicine
Department of Pediatrics
Weill Cornell Medicine
mav2019@med.cornell.edu

Mary Jo Ward, PhD
Child Development
Department of Pediatrics,
Weill Cornell Medicine
mjward@med.cornell.edu

Jeremy Wiygul, MD
Pediatric Urology
Weill Cornell Medicine
Jrw9011@med.cornell.edu

Roger Widmann, MD
Pediatric Orthopedic Surgery
Hospital for Special Surgery
widmannr@hss.edu

Stefan Worgall, MD, PhD
Pediatric Allergy, Immunology, Pulmonology
Friedman Research Laboratories
Weill Cornell Medicine
stw2006@med.cornell.edu

Vivien Yap, MD
Neonatal-Perinatal Medicine
Department of Pediatrics
Weill Cornell Medicine
Vly9001@med.cornell.edu

Mentoring & Research Opportunities in Pediatrics

Erika Abramson, MD, MS

General Academic Pediatrics, Departments of Pediatrics, Healthcare Policy & Research
Weill Cornell Medicine
err9009@med.cornell.edu

Field(s) and topics of interest: Educational research, pediatric hospitalist and outpatient medicine, health services research, healthcare safety and quality research

Research: Health services research, healthcare safety and quality research

Project Description: I mentor a host of residents and fellows on general pediatric, educational, and health services research projects. There is frequently a role for medical students in these projects, with varying responsibilities ranging from subject recruitment, retrospective chart review, data analysis, and abstract/manuscript writing. If any interest in these fields, please feel free to reach out to me.

Preferred Experience: None required

Oleh Akchurin, MD, PhD

Pediatric Nephrology, Department of Pediatrics
Weill Cornell Medicine
oma9005@med.cornell.edu

Field(s) and topics of interest: Nephrology/Pediatric Nephrology. Iron metabolism, fibrosis, bone health, growth and development.

Research: Anemia, iron metabolism, renal fibrosis and bone health in chronic kidney disease

Project(s) Description: My research is focused on identification of novel mechanisms linking iron metabolism with renal fibrosis and systemic complications of chronic kidney disease, including musculoskeletal complications. In my research, I am using cell culture models, mouse models, human samples, and analysis of human cohorts.

Students' Role in the Project: Students interested in basic science will be able to participate in laboratory experiments. Students interested in clinical research will have the opportunity to work with our unique database of children with chronic kidney disease.

Preferred Background/ Experience: Previous research experience would be helpful but is not required.

Michael J. Alfonzo MD, MS

Pediatric Emergency Medicine, Departments of Pediatrics and Emergency Medicine
Weill Cornell Medicine
mia2016@med.cornell.edu

Field(s) and topics of interest: Pediatric Emergency Medicine; Global Health; Sepsis; Electronic Health Records

Research: Impact of Saving Children's Lives Program on Provider Knowledge, Resource Capacity and Patient Outcomes in Tanzania Co-investigators: Christine Joyce MD (Pediatric Critical Care Medicine, Weill Cornell), Adolphine Hokororo (Pediatrics, Weill Bugando)

Project Description: Saving Children's Lives (SCL), was created in 2013 to fill the gap in community healthcare providers' knowledge and skills to recognize and treat acute illness in children. A 2-day program adapted from the AHA program PEARS (Pediatric Advanced Emergency Assessment, Recognition, and Stabilization) is designed to reinforce the WHO's IMCI (Integrated Management of Childhood Illness) training and focus on the acutely ill child needing urgent hospital referral. Disorders include acute respiratory distress and hypovolemic shock from diarrhea. Implementation of a standardized mortality audit will be used for collection of outcome measures. Following provider training, data will be collected and analyzed to assess for a decrease in mortality.

Students' Role in the Project: Students will join a multidisciplinary team in several projects. Students can participate in research study design, data collection, and manuscript writing. Students will learn how to obtain informed consent, conduct chart reviews, and analyze data.

Preferred Background/ Experience: None required. Interested students should be creative, motivated, and interested in global health. Students planning to participate in a global health elective are strongly encouraged to collaborate.

Zoltan Antal, MD

Pediatric Endocrinology
Weill Cornell Medicine
Email: zoa9003@med.cornell.edu

Field(s) and topics of interest: Endocrine late effects in survivors of childhood cancer, Mental health in children with type 1 diabetes, Growth in children with Fanconi Anemia
Research: Current projects:

1. Growth chart assessment in children with Fanconi Anemia
2. Evaluating gonadal function in male survivors of cancer post stem cell transplant

Project Description: Currently we are doing retrospective analyses in listed study groups. Future plans include a prospective analysis of sexual function in males at risk for hypogonadism that will focus on correlation with serum testosterone levels.
Students' Role in the Project: This will vary with the project and may include such activities as data collection and analysis or formulation of a validated questionnaire to be used in the prospective study.

Preferred Experience: None required

Elaine Barfield, MD

Pediatric Gastroenterology and Nutrition, Department of Pediatrics
Weill Cornell Medicine
elb2020@med.cornell.edu

Field(s) and topics of interest: Home Infusions of biologics in pediatric Inflammatory Bowel Disease (IBD), Fecal Microbiota Transplant for recurrent Clostridium difficile infection.

Research: Examination of a home infusion program in IBD; Safety of home infliximab infusions in IBD; Multicenter study of fecal microbial transplantation for Clostridium difficile infection in children; Cost of hospital infliximab and vedoluzimab infusions in pediatric IBD.

Students' Role in the Project: IRB proposal development, subject recruitment, data entry, abstract and manuscript preparation. The student will learn the basics of research project development, subject recruitment, and gain experience in writing abstracts/manuscripts

Preferred Background/ Experience: Must be enthusiastic, motivated and very organized. Knowledge of End Note and REDCap are helpful but not required.

Marisa Censani, MD

Pediatric Endocrinology, Department of Pediatrics,
Weill Cornell Medicine
mac9232@med.cornell.edu

Field(s) and topics of interest: Obesity and insulin resistance, bone and mineral metabolism, growth, thyroid disorders, and diabetes.

Project Description: Patient recruitment, data acquisition, data analysis, and abstract formulation in patient-oriented research studies; please contact Dr. Censani for further details.

Preferred Background/ Experience: None

Kimberley Chien, MD

Pediatric Gastroenterology and Nutrition, Department of Pediatrics
Weill Cornell Medicine
kac9091@med.cornell.edu

Field(s) and topics of interest: Transition care of pediatric patients with chronic gastrointestinal diseases, currently investigating the needs of adolescents with Inflammatory Bowel Disease (IBD) during transition to adulthood and measuring effectiveness of interventions to improve patient outcomes and quality of life; Prevention of venous thromboembolism (VTE) in pediatric IBD

Research Project #1 (Principal Investigators (PI): Drs. Chien and Kucine): VTE burden in hospitalized IBD children. We are establishing the current risk/incidence of VTE in hospitalized pediatric IBD and studying the impact of VTE/ complications on the US healthcare system using national databases. Qualitative and quantitative research methods will be used.

Students' Role in the Project: Students will be involved in collection and analysis of data, and abstract writing.

Research Project #2 (PI: Dr. Kimberley Chien): Assessment of the WCM formal transition care program for pediatric IBD. We will investigate transition-care related issues and assess the impact of our established formal transition care program on the transition readiness of adolescent IBD patients using qualitative and quantitative research methods.

Students' Role in the Project: Students will be involved in patient recruitment, collection and analysis of data, national presentation submission, and abstract writing.

Preferred Experience for both: None required

Chris Cunniff, MD

Medical Genetics, Department of Pediatrics
Weill Cornell Medicine
cmc9039@med.cornell.edu

Field(s) of Interest: Medical genetics, including genetic disorders associated with predisposition to cancer, multiple malformation syndromes and disorders of sexual development

Research: Bloom Syndrome Registry – a database of health information on persons with Bloom syndrome, a chromosome instability syndrome with predisposition to cancer

Project Description: The Bloom Syndrome (BS) Registry contains information on all aspects of health in this population and can be used to ask and answer questions about health and welfare in BS. We have ongoing projects examining feeding, growth, cancer development, intelligence, and academic accomplishment. Dr. Cunniff is also interested in development of guidelines for care of people with genetic disorders and their utility.

Students' Role in the Projects: Students may propose a question that can be examined with Registry data, or he/she may also join in one of our currently existing or planned projects. The student will work closely with Dr. Cunniff and the Bloom Syndrome Registry to extract and analyze data from the Registry; or he/she will use data being actively collected to describe characteristics of a subset of persons in the population.

Preferred Experience: None required

Diane Felsen, PhD and Dix P Poppas, MD

Pediatric Urology, Department of Pediatrics
Weill Medicine
dfelsen@med.cornell.edu

Field(s) of and topics of interest: Congenital Adrenal Hyperplasia and Bladder dysfunction

Research Project #1: Modeling Congenital Adrenal Hyperplasia in zebrafish and in adrenocortical cells: Congenital Adrenal Hyperplasia [CAH] is an inherited deficiency of enzymes involved in steroid hormone production, mainly 21-hydroxylase [21-OHase]. Decreased cortisol and aldosterone production causes adrenocorticotropic hormone stimulation of the adrenal cortex, leading to excess synthesis of male hormones. In severe CAH, children require life-long treatment to replace cortisol and aldosterone. Deficiency in females causes virilization, beginning in utero, causing virilized external genitalia that is often treated with feminizing genitoplasty.

There are 2 sub-projects. The first uses the zebrafish to model CAH and 21-OHase deficiency. Using CRISPR/CAS-9 to delete 21-OHase and study the effects in zebrafish, we will determine if replacement restores the phenotype. Studies examine the effects of 21-OHase and other steroid synthetic enzymes. Other studies will be carried out using the H-295 human adrenocortical cell line. Overall the goal is to determine if/how 21-OHase enzyme activity can be restored in patients with CAH.

Research Project #2: Design of a Synthetic Bladder Augment Patch: Bladder dysfunction related to small, fibrotic bladders is a significant problem in children, due to high bladder storage pressures and low bladder volume. High pressures impact bladder function by inducing fibrosis and can lead to incontinence, renal failure and a lifetime of dialysis, and may require renal transplantation.

The conventional surgical approach to increase bladder size is bladder augmentation [ileocystoplasty], but has significant morbidity. We are designing a synthetic bladder augmentation patch to increase the bladder storage capacity, which would reduce much of the current surgical morbidity, and also eliminate the metabolic complications of ileocystoplasty. We will be testing this bladder patch in a porcine animal model.

Students' Role in the Project: Students will learn basic laboratory techniques related to zebrafish/cell growth and maintenance, as well as cloning, PCR, western blots and CRISPR/CAS9 technology. In the bladder project, the student will assist in surgery and will then study the tissue in vitro using a variety of basic lab techniques.

Preferred Background/ Experience: Willingness to learn and work hard and committed interest are pre-requisites.

Cori Green, MD, MS

General Academic Pediatrics, Department of Pediatrics
Weill Cornell Medicine
cmg9004@med.cornell.edu

Field(s) and topics of interest: Integration of pediatric mental health (MH) care into primary care, training practicing and future pediatricians in managing pediatric mental health problems, integrated models of mental health care

Research: To study pediatricians' attitudes, self-efficacy, and practices in mental health integration and the impact educational interventions have on these variables. Assessing whether increased mental health integration increases children's access to mental health services and health outcomes.

Project Description: A research data repository was created that has all pediatric patients who receive primary care at the main hospital center and their mental health data since 2006 in a database. Pediatricians survey data can link to this data base to look for associations between attitudes and self-efficacy and practices and patient outcomes.

Students' Role in the Projects: Students will be involved in creating a research question that can be answered in the data repository; possibly doing some chart reviews; analysis of data; and writing an abstract and/or manuscript.

Preferred Experience: None required

Daniel W. Green, MS, MD

Clinical Orthopaedic Surgery
Hospital for Special Surgery
greendw@hss.edu

Field(s) of Interest: Pediatric Orthopedic Surgery and Scoliosis

Research: Selected clinical projects in pediatric orthopedic surgery

Project Description (with Co-Investigators Drs. Emily Dodwell and Peter Fabricant**)** Previous projects have included: DDH, congenital muscular torticollis, discoid meniscus, scoliosis and kyphosis.

Students' Role in the Project: Literature review, radiograph review, data analysis

Preferred Background/ Experience: None requested

Katherine A. Hajjar, MD

Pediatric Hematology-Oncology,
Departments of Pediatrics and Cell and Developmental Biology
Weill Cornell Medicine
khajjar@med.cornell.edu

Field(s) and topics of interest: Hemostasis and thrombosis, angiogenesis, vascular leak and inflammatory syndromes, sepsis

Research: Regulation of membrane dynamics in vascular biology and inflammation

Project Description: The plasma membrane serves as a dynamic platform for assembly of molecules that regulate the clotting of blood and prevent fluid leak from blood vessels. At the same time, repair of intracellular organelle membranes is central to the control of inflammation. In humans, the annexins are a 12-member family of calcium-regulated, phospholipid-binding proteins that modulate a spectrum of dynamic membrane-related events. Our lab is defining these mechanisms in the context of vascular health and the inflammatory response. We use in-patient and out-patient clinical samples, genetically engineered mice, and cell culture techniques to determine how the annexins, especially annexin A2, impact health and disease. Our aim is to understand their specific roles in preventing thrombosis and vascular leak, regulating the innate immune system, and controlling the development new blood vessels. In particular, we wish to examine these processes in the pediatric population, where little is known about annexin expression and function. Ultimately, we hope that this research will lead to new treatment approaches for disorders involving thrombosis, excessive angiogenesis, and unregulated inflammation in children.

Students' Roles in the Projects: Depending on prior experience, students will learn basic laboratory techniques such as cell culture, basic molecular biology, western blotting, ELISA, mouse surgery, and blood and tissue processing. In addition, students may embark on analytical literature reviews relevant to ongoing projects.

Preferred Background/Experience: Strong interest in research, intellectual curiosity, and enthusiasm.

Barry Kosofsky, MD, PhD

Pediatric Neurology, Departments of Pediatrics, Neurology
Weill Cornell Medicine
bar2009@med.cornell.edu

Research: Exercise therapy as treatment for mild Traumatic Brain Injury (mTBI)

Project Description: We are pursuing a clinical research program to establish the efficacy of a graded exercise program to accelerate the recovery of individuals who have persistent post-concussive symptoms following mTBI. We are using functional (autonomic, EEG, evoked responses, and eye tracking), and structural (DTI/MRI) assessments to identify changes in the brain following mTBI that will be predictive of, and correlate with the response to exercise therapy.

Students' role in the project: Subject enrollment and assessments during participation in a clinical research protocol.

Preferred Background/ Experience: Clinical research experience preferred (especially prior work in clinical trials).

Nicole Kucine, MD

Pediatric Hematology/Oncology, Department of Pediatrics
Weill Cornell Medicine
nik9015@med.cornell.edu

Research: General areas of interest are thrombosis, general hematology disorders, and myeloproliferative neoplasms in children**.**

Students' Role in the Projects: No specific projects are available at this time

Preferred Experience: None required

Juhi Kumar, MD, MPH

Pediatric Nephrology, Department of Pediatrics
Weill Cornell Medicine
juk2013@med.cornell.edu

Field(s) and topics of interest:

Non-invasive biomarkers of kidney injury in pediatric kidney allograft recipients using urine messenger RNA and urinary metabolites
Early detection of kidney injury in neuroblastoma survivors
Mineral metabolism in pediatric chronic kidney disease

Research: My NIH funded research focuses on identifying early biomarkers of kidney injury so that renoprotective measures can be instituted in a timely way and lessen further kidney damage. I am currently evaluating biomarkers of kidney injury in two specific pediatric populations, kidney transplant recipients and neuroblastoma survivors.

Project Descriptions:

VIRTUUS: Validating Injury in the Renal Transplant Using Urinary Signatures) in Children Study

This NIH/NICHD funded multi-center cohort study aims to validate in pediatric kidney allograft recipients, urinary messenger RNA signatures and metabolite profiles associated with acute cellular rejection, antibody mediated rejection and BK virus nephropathy in adult kidney transplant recipients. By validating noninvasive diagnostic and prognostic biomarkers of early kidney allograft injury in pediatric recipients we hope to advance pediatric transplant clinical practice - by creating opportunities for non-invasive immune surveillance to inform preemptive treatment decisions before clinical signs arise, resulting in better long-term outcomes.

Identifying Biomarkers of Kidney Injury in Neuroblastoma: Survivors Clinical and Translational Science Center (PI's: Juhi Kumar, Anuradha Gajjar, Danielle Novetsky Friedman). This study aims to assess traditional and novel markers of kidney injury in neuroblastoma survivors.

Students' Role in the Project: Students will assist in several aspects of the projects

Preferred Experience: Not required

David C. Lyden, MD, PhD

Pediatric Hematology Oncology, Department of Pediatrics
Children's Cancer and Blood Foundation Labs
Weill Cornell Medicine
dcl2001@med.cornell.edu

Field(s) and topics of interest: Cancer Metastasis

Research Title: Tumor exosomes determine pre-metastatic niche formation and organotropism

Project Description: Tumor microparticles known as exosomes are released into the circulation and fuse with specific cells at distant sites establishing a pre-metastatic niche in cancer patients. Tumor exosomes transfer exosomal tumor contents (proteins, miRNA and DNA) into normal cells and "educate" these cells to a pro-metastatic phenotype. Our lab has discovered a new particle called an exomere (amembranous particle smaller than an exosome), which packages proteins enriched in metabolic enzymes.

Students' Role in the Project: The student will be responsible for determining the key factors associated with exosomes that support their role in organotropism.

Preferred Background/ Experience: None requested

Marianne Nellis, MD, MS

Division of Pediatric Critical Care
Department of Pediatrics,
Weill Cornell Medical College
212-746-3056
man9026@med.cornell.edu

Field(s) of Interest: Transfusion medicine research

Research Title: The Effects of Transfusion of Blood Products in Critically Ill Children

Project Description: I am working on several retrospective and prospective projects looking at the effects of red blood cell and platelet transfusions on critically ill children.

Students' Role in the Projects: Students can be involved in the projects on several levels including data acquisition, analysis and manuscript writing.

Preferred Experience: None required

Snezana Nena Osorio, MD

General Academic Pediatrics, Department of Pediatrics
Weill Cornell Medicine
snm2001@med.cornell.edu

Field of Interest: Safety & quality in healthcare

Title of Project: Improving Pediatric Patient-Centered Care Transitions: A Multi-Center Research Quality Improvement Collaborative

Project Description: This study aims to promote partnership between patients/parents/caregivers and medical teams via shared ownership of care transitions at hospital discharge. The transition from the inpatient to outpatient setting presents a safety risk to pediatric patients. Errors in improper medication use, failure to recognize and activate contingency plans, and failure to adhere to follow-up appointments reflect poor patient hand-off prior to hospital discharge. We aim to improve parent/caregiver self-management.

Our intervention- Pediatric Discharge Bundle consists of 1) pre-discharge confirmation of patient/caregiver readiness for discharge, 2) caregiver's ability to teach-back essential components of a patient/caregiver-generated care plan, and 3) post-discharge phone follow-up to review essential information and clarify questions to "bridge the gap" prior to follow-up with the PCP. Our secondary objectives are to improve care coordination, provider handoff, and to decrease readmission rate.

Student Research Opportunities IMPACT Study: #1Teach Back Direct Observation: To evaluate the quality of the Teach Back technique used at hospital discharge by the nursing staff. After training, students will observe discharge instructions by nursing staff using a checklist-type instrument. Schedule is flexible and can be in the afternoon or evening. #2. Preventable Readmissions: To understand the epidemiology of preventable pediatric readmissions and to identify the risk factors contributing to preventable readmissions. After training, students will 1) review charts to determine the causes for readmission using an established tool; 2) interview caregiver in person or by phone about their hospital experience. #3. Provider Satisfaction Surveys and Qualitative Study: To better understand discharge communication needs to handoff patients from the hospitalist services to outpatient subspecialty providers.

Preferred Background/ Experience: None

Virginia Pascual, MD

Drukier Institute for Children's Health, Department of Pediatrics
Weill Cornell Medicine
vip2021@med.cornell.edu

Field(s) and topics of interest: Inflammatory and autoimmune diseases that start in childhood, Systemic Lupus Erythematosus (SLE), Juvenile Dermatomyositis (JDM), Juvenile Arthritis, Kawasaki Disease, Pediatric COVID-19, Multi-System Inflammatory Syndrome in Children (MIS-C), Immuno-monitoring vaccine responses in children

Research: Understanding the pathogenesis of pediatric inflammatory and autoimmune diseases, identifying biomarkers to follow patients in the clinic and novel therapeutic targets.

Project Description: The immune system plays a central role in the defense against pathogens, but excessive immunity is associated with autoimmune and inflammatory diseases. Our lab is interested in understanding how immune dysregulation contributes to these diseases when they start in children. Towards this goal, we use state-of-the-art technologies to monitor the composition, activation status and function of different immune cells isolated from patient samples. Ultimately, we hope that our research will lead to new therapeutic approaches and improve the lives of children.

Students' Roles in Project(s): Depending on prior experience, students will learn basic laboratory techniques such as cell culture, profiling gene and protein expression at the bulk and single cell levels, bioinformatics and systems biology approaches to monitor the human immune system. In addition, students will embark on analytical literature reviews relevant to ongoing projects.

Jeffrey Perlman, MD

Newborn Medicine, Department of Pediatrics
Weill Cornell Medicine
jmp2007@med.cornell.edu

Field(s) and topics of interest: Neonatology, Brain development, Resuscitation, Global health

Research: Our current project goal is to determine biomarkers for identifying infants at high risk for neurodevelopmental deficits following perinatal hypoxia-ischemia treated with selective head cooling

Project Description: Evaluate the value of advanced MRI imaging and/or recovery of the EEG as early biomarkers of outcome in infants with HIE treated with selective head cooling

Students' Role in the Project: Assist in the review of the EEG after birth until the development of sleep awake cycling and delineate the pathways to recovery. Evaluate the potential role of MRI spectroscopy and or DTI in predicting recovery following HIE.

Preferred Background/ Experience: None

Matthew Smith-Raska, MD, PhD

Division of Newborn Medicine, Department of Pediatrics
Weill Cornell Medicine
Email: mrs7001@med.cornell.edu

Field(s) and topics of interest**:** Epigenetic Inheritance of Disease

Research**:** While many pediatric diseases are characterized by a strong heritable component, very thorough examination of the genome has been unable to explain the inheritance of these diseases**.** I study how diseases can be inherited independent of mutations in genes. This phenomenon is called "epigenetic inheritance" and is based on the concept that our lifetime exposures and experiences affect the profile of molecules (such as DNA methylation or small RNAs) in our germ cells, and how these molecules are inherited at the time of fertilization and affect the risk of disease by influencing embryogenesis and fetal development. More specifically, I study two genes that I believe are critical regulators of this process, using mouse models as well as in vitro tissue culture approaches.

Project Description: This project involves exposing mice to various factors (high fat diet, stress, prenatal dexamethasone, etc.) and measuring how this affects the inheritance of various diseases in descendants, as well as how these exposures affect the profile of molecules in the sperm and oocytes.

Students' Role in the Project: Students will have the opportunity to isolate sperm and oocytes form mice after various exposures, followed by isolating the epigenetic molecules from these cells and analyzing the differences between exposed and non-exposed mice. No experience required; we can teach all of the techniques to anyone interested.

Preferred Experience: None

Heidi Stuhlmann, PhD

Departments of Cell & Developmental and Pediatrics
Weill Cornell Medicine
hes2011@med.cornell.edu

Research: Placental Development and Placentopathies

Project Description: The placenta serves as the site of contact for the maternal and embryonic circulatory systems to enable nutrient and gas exchange. It contains two primary functional cell types, trophoblast and endothelial cells. Proper placental development requires invasion and differentiation of trophoblast cells, as well as coordinated maternal vascular remodeling and fetal vasculogenesis. Any disruption in

these processes can result in placental pathologies, including intrauterine growth restriction and preeclampsia (PE). Uteroplacental vascular insufficiency, a main cause of IUGR, results in chronic oxygen and nutrient deprivation. Fetal circulatory adaptations compensate for growth restriction, but also program the fetus for increased risk of hypertension, cardiovascular disease, and type 2 diabetes, later in life. PE is a leading cause of maternal and fetal morbidity and mortality worldwide, and the only resolving treatment is delivery of the baby and placenta. Although the pathophysiology of PE remains largely unknown, inadequate trophoblast cell invasion, endothelial cell dysfunction, dysregulated uteroplacental vascularization, and an imbalance of pro- and anti-angiogenic growth factors have been implicated in the disease.

We are using mouse models, trophoblast stem cells and human placental samples to investigate the role of EGFL7 and miR-126 during normal and pathological placental development. Expression of EGFL7, a secreted angiogenic factor, and miR-126 a non-coding microRNA within the Egfl7 gene were previously thought to be endothelial-restricted. We found that Egfl7 and miR-126 are expressed in the placenta in the maternal and fetal vasculature, as well as in trophoblast cells (Lacko et al., 2014. Mech. Dev. 133:163-176). Using loss-of-function mouse models, we uncovered specific and distinct roles for EGFL7 and miR-126 during placental development. Loss-of Egfl7 results in defects of placental vascularization, malperfusion, and fetal growth restriction.

Our studies show that miR-126 regulates glycogen trophoblast proliferation and expression of imprinted genes specifically in the placenta. We also have a keen interest to understand their role in human placentas. In an ongoing collaboration with clinician-scientists in Maternal-Fetal Medicine at Weill Cornell, Columbia, and the University of Rom, we are investigating the role of EGFL7 protein in preeclampsia.

Student's Role in the Project: The student would get "hands-on" lab experience. Initially, the student would work together with a research scientist in the lab and later on work more independently. Potential projects include: Analysis of serum, placental explants cultures from PE patients for presence of EGFL7, and miR-126.

Preferred Background/ Experience: Basic lab skills, some knowledge in developmental biology, strong interest in research to understand disease mechanisms.

Mark Souweidane, MD

Neurological Surgery
Weill Cornell Medicine
mmsouwei2med.cornell.edu

Field(s) and topics of interest: Pediatric brain tumors, Drug delivery to the brain, Translational research using preclinical models, early response monitoring for brain tumors

Research: Using preclinical research methods employing cell culture work and animal models derived from children with brain tumors, the Souweidane laboratory explores novel therapeutic agents, tumor response rates, and unconventional drug delivery methods with the hope of implementing early phase clinical trials in children.

Project Description: Incurable tumors in children warrant exploratory methods for treatment. Using a host of preclinical methods, drugs are tested to assess utility against

some of these tumors. Therapeutic agents are also manipulated for in vivo tracking to assess important pharmacokinetic monitoring. Nontraditional delivery routes including convection-enhanced delivery, intra-arterial and intrathecal are tested for early phase translation.

Students' Role in the Project: Lab or bench side research (minimum commitment of 6 months, preferable one year)
Retrospective data analysis related to neuro-imaging response data (minimum commitment of 6 months)

Preferred Experience: None required other than a professional and collegial demeanor

Chani Traube, MD

Pediatric Critical Care Medicine
Department of Pediatrics, Weill Cornell
chr9008@med.cornell.edu
Field(s) of Interest: Pediatric Delirium, Pediatric Sedation, Pediatric Outcomes after Critical Illness, Pediatric Critical Care Medicine, Pediatric Neuro-Intensive Care,

Research: Pediatric Delirium: Epidemiology, Interventions, and Outcomes

Project Description: Nearly 200,000 children are admitted to the pediatric intensive care unit in the US each year, and nearly 1 in 4 children experience delirium while critically ill. At Cornell, we have implemented universal delirium screening in the PICU as standard of care. We are now investigating ways to prevent and treat delirium in at-risk children, and define the effect of delirium on patient and family outcomes, in order to improve the long-term health of survivors and their families.

Students' Role in the Project: Students will have the opportunity to join a multi-disciplinary team engaged in several projects regarding pediatric critical illness and delirium. They will participate in research study design, data collection, and manuscript writing. Students will learn how to obtain informed consent, conduct chart reviews, analyze data, and perform follow-up phone calls using surveys to detect whether a patient and his/her family members have experienced long-term effects from delirium or critical illness.

Preferred Background/ Experience: None required. Interested students should be friendly, comfortable interacting with children and their families, and demonstrate organizational skills and attention to detail. Research is ongoing, with active clinical trials in progress, others pending IRB approval, and others in planning stage.

Stefan Worgall, MD, PhD

Pediatric Allergy, Immunology, Pulmonology
Friedman Research Laboratories
Weill Cornell Medicine
stw2006@med.cornell.edu

Field(s) and topics of interest: Cystic fibrosis / host defense in lung / gene therapy

Research: Lung antigen presenting cells in cystic fibrosis and Respiratory Syncytial Virus (RSV) vaccine using capsid-modified adenovirus vectors

Project Descriptions:

1. Cystic fibrosis lung disease is characterized by exaggerated inflammation and increased susceptibility to infections. Although the CFTR protein is primarily thought to be expressed by epithelial cells we and others have studied the expression of CFTR in non-epithelial cells, in particular antigen presenting cells in the lung. This project studies the abnormalities of lung dendritic cells derived from CF knock-out mice. Our data so far indicates that abnormal CFTR expression lung macrophages and dendritic cells is related to abnormalities in innate immune responses. These findings are important in understanding lung disease in CF and also to identify new targets for therapy of this severe disease.

2. Infections with RSV are one of the major causes for viral lower respiratory tract illness, especially in young children. Our laboratory has been working on the development of genetic vaccines for pulmonary pathogens. This project aims to analyze the immunological properties of a novel anti-RSV vaccine using a capsid-modified adenovirus vector. Protection against RSV could be achieved with an efficient vaccination strategy inducing neutralizing humoral immunity as well as a Th1-dominant cellular response. Adenovirus gene transfer vectors can be used to evoke robust systemic and mucosal immunity against an immunogen expressed as a transgene and Ad functions as a potent adjuvant. The Ad modifications include the addition of a RGD motif to the fiber knob, a modification known to enhance infection of antigen presenting cells and to increase Th1-type immune response, as well as the addition of RSV epitopes into the Ad capsid. These modified vectors will be assessed to induce immunity and protection against RSV in adult and neonatal mouse models. The study will evaluate if a modified Ad vector expressing the RSV F protein engineered to increase activation and infectivity of antigen presenting cells could be useful as a RSV vaccine.

Students' Role in the Project: Design of new and continuation of the present experiments. Student will be involved in cell culture studies and flow cytometry analysis of lung dendritic cells (project 1) and adenovirus vector construction and immunological analyses (project 2).

Acknowledgements

Pediatric Research Day and the journal “The Art and Science of Pediatrics” are supported by Medical Student Education Committee (MSEC) and the Department of Pediatrics, Weill Cornell Medicine

Student Leadership:

2020: Stephanie Rager and Heba Shaaban
2021: Federico Palacardo, Anum Hussain, Nell Borys, and Paul Young

Artwork:

Children at the Phyllis and David Komansky Children's Hospital
Jaqueline Tassielo, MPS, ATR-BC, LCAT, Art Therapist, Hematology/Oncology
Department of Child Life/Creative Arts Therapy
NewYork-Presbyterian/Weill Cornell Medical Center

Faculty Advisors:

Susanna Cunningham-Rundles, PhD and Thanakorn Jirasevijinda, MD