

# The Pathologist

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## Research Highlights

*Edited by David P. Hajjar, PhD*



*Steven Z. Josefowicz, PhD  
Assistant Professor  
of Pathology and  
Laboratory Medicine*

**Dr. Steven Z. Josefowicz** joined the Department of Pathology and Laboratory Medicine, Division of Experimental Pathology, as an Assistant Professor in May 2017. Dr. Josefowicz also has appointments in the WCM graduate school in the Immunology and Microbial Pathogenesis (IMP) Program and the Physiology, Biophysics, and Systems Biology (PBSB) Program. After receiving a bachelor's degree from UC Berkeley, and working three years as a research technician at UCSF, Dr. Josefowicz conducted his graduate work with Dr. Alexander Rudensky at the University of Washington in Seattle, WA as well as Memorial Sloan Kettering Cancer Center in New York, NY. His PhD work focused on mechanisms of immune tolerance and the differentiation and function of regulatory T cells. Specifically, he studied how the immune system can so effectively combat pathogens while tolerating food and commensal microbiota. He then joined the laboratory of C. David Allis at The Rockefeller University to study epigenetic mechanisms underlying cellular differentiation and stimulatory events in the immune system. The Josefowicz lab now focuses on fundamental questions of genome organization and regulation, especially as it pertains to rapid cellular responses, including innate immune cell responses to pathogen sensing. The ongoing research in his lab is identifying the links between aberrant activation of "signaling to chromatin" pathways, epigenetic alterations, and disease states, which include cancer, chronic inflammatory conditions, and accelerated aging.

## Research Background and Focus

As a doctoral student with Dr. Alexander Rudensky, Steven studied the regulation of the *Foxp3* gene, which controls regulatory T (Treg) cell differentiation and function. These studies revealed enhancers and chromatin features that determined spatiotemporal expression of *Foxp3* and therefore differentiation and lineage fidelity of Treg cells. Epigenetic mechanisms acting on this single gene, *Foxp3*, determined several aspects of Treg cell biology: 1) the combinatorial signals and anatomical location leading to Treg cell differentiation, and 2) the encoded memory of Treg cell commitment and heritable lineage stability, and the frequency of Treg cell differentiation and balance of immunity.<sup>1-6</sup> This potency and diversity of epigenetic features was striking to Steven; he was motivated by the lack of mechanistic insights into these features controlling exquisite control over the genome—a central feature of complex organisms with diverse cell types. To pursue a deeper understanding of genome regulation, he decided to join the lab of C. David Allis at The Rockefeller University. Steven now contemplates what he sees as two major epigenetic challenges faced by complex organisms. First, how is a single genome interpreted to instruct over a thousand distinct cell fates. Second, how are extracellular signals transmitted to turn on select genes in the 3 billion base-pair genome—this is a challenge of integrating signal transduction and genome organization. These challenges are especially interesting in the context of immunity, where delicately balanced immune cell differentiation determines diverse immune responses or tolerance. Survival depends on the speed and scope of cellular responses to pathogens or tissue damage. Steven's focus is the study of mechanisms that "solve" these epigenetic challenges, their function in immune cell differentiation and function, and their dysregulation in disease.

Steven also seeks to identify mechanisms that enable cells to selectively induce expression of specific genes in response to environmental cues. Key to this process is what he calls "signaling-to-chromatin" pathways. Of special interest to Steven is the poorly understood process by which these signals initiate transcription of a small number

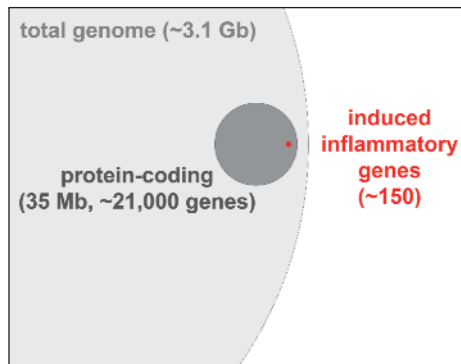
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# Research Highlights

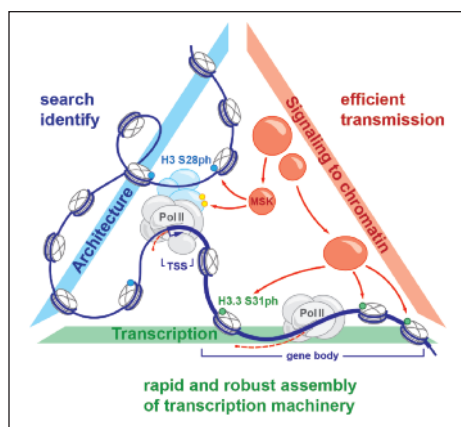
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of select genes with speed and precision in the context of two-meters of “chromatinized” DNA compacted within a complex, micron-scale nuclear environment—a process well described by the metaphor of finding a needle in a haystack, and quickly! (Fig.1).



**Figure 1: A Needle in the 3.1 Gb Genome.** Proportionate representation of induced inflammatory genes that are induced following macrophage sensing of bacterial components for host defense.

Factors in these signaling-to-chromatin pathways are critical in rapid cellular responses which can become dysregulated in disease, and frequently co-opted in the process of oncogenesis. However, surprisingly little is known of how activation of kinase cascades can transmit information directly to chromatin for regulation of the nuclear architecture. The Josefowicz lab is interested in understanding how cells address three primary challenges. (Fig. 2).



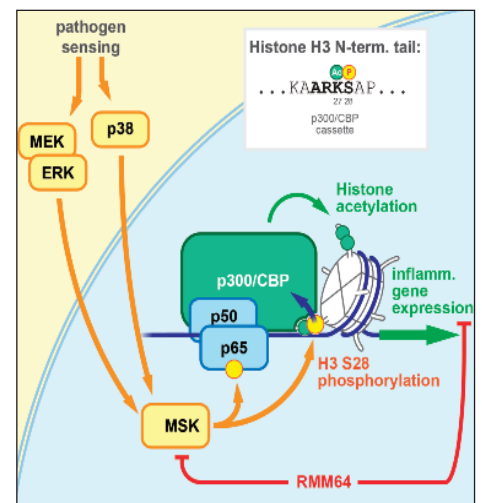
**Figure 2: Three Biological Challenges of Stimulation-Induced Gene Expression.** 1) Efficient transmission of information from the cell surface to genes in chromatin; 2) Search and identify select response genes within the 3 billion base-pair genome; 3) Rapidly assemble multi-molecular transcription machinery for robust gene expression. Ongoing research by Dr. Josefowicz and his group highlight a role for histone phosphorylation in these processes.

He and others believe that:

1. Cells must efficiently transmit information from extracellular sensing events via signaling pathways to genes in chromatin.
2. These signals, once they reach chromatin must identify the specific genes to be induced by a given stimulus, and then activate gene promoters and enhancers.
3. Even once these select genes are “found,” a highly complex transcription machinery must be recruited to these sites and rapidly assemble to drive transcription through a gene. These stimulation-induced transcription events frequently occur in contexts where organism survival is at stake—immune responses and neuronal signaling—and so the speed and scope of these responses is paramount.

Finally, Steven identified a pathway that enables rapid inflammatory gene expression in macrophages upon pathogen sensing when he was in the David Allis lab.<sup>7</sup> They found that the inflammatory response requires coordinated activation of both transcription factors and chromatin in order to induce transcription for defense against pathogens and environmental insults. Steven sought to elucidate the connections between inflammatory signaling pathways and chromatin through genomic footprinting of kinase activity and histone phosphorylation events. In this work, H3 serine 28 phosphorylation (H3S28ph) was identified as the principal stimulation-dependent histone modification which was enriched in induced genes in stimulated mouse macrophages. Using pharmacological and genetic approaches, Steven and his colleagues identified mitogen- and stress-activated protein kinases (MSKs) as primary mediators of H3S28ph in macrophages. Cell-free transcription assays demonstrated that H3S28ph directly promotes p300/CBP-dependent transcription. Further, MSKs can activate both signal-responsive transcription factors and the chromatin template with additive effects on transcription. As a result of this potent and dual regulatory function, specific inhibition of MSKs in macrophages selectively reduced transcription of stimulation-induced genes. These results suggest that MSKs incorporate upstream signaling inputs and control multiple downstream regulators of inducible transcription. (Fig. 3).

Steven and his group at WCM hope to gain insights into the process of informational transfer from outside the cell to chromatin that can explain the speed, specificity, and robustness of signal-induced transcription. Beyond the potential for new mechanistic insights into signaling-to-chromatin pathways, and their dysregulation in disease, the



**Figure 3: Chromatin Kinases Act on Transcription Factors and Histone Tails in Regulation of Inducible Transcription.** See Josefowicz, S.Z. et al. Mol Cell, 2016.<sup>7</sup>

goal of his lab will be to develop an understanding of how signals find their specific target genes in chromatin which has the potential to generate results across a range of scale, from molecules to cells.

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## Focus

by Daniel M. Knowles, MD



Paula Ginter, MD

### SURGICAL PATHOLOGY

**Dr. Paula Ginter** joins us as **Assistant Professor of Pathology and Laboratory Medicine**. She received her medical degree from Chicago Medical School at Rosalind Franklin University of Medicine

and Science in 2010 and completed her residency education in anatomic and clinical pathology in our own Weill Cornell-NewYork-Presbyterian Hospital Pathology Residency Training Program. Subsequently, she completed a breast pathology fellowship with us. She joins us from NewYork-Presbyterian Queens. Dr. Ginter is certified in anatomic and clinical pathology by the American Board of Pathology and subspecializes in Breast Pathology.

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Melanie E. Johncilla, MD

### SURGICAL PATHOLOGY

**Dr. Melanie E. Johncilla** joins us as **Assistant Professor of Pathology and Laboratory Medicine** with a subspecialization in gastrointestinal pathology.

Dr. Johncilla received her MD from Yale University in 2011 and completed her residency training in Anatomic and Clinical Pathology at the Brigham and Women's Hospital in 2015. Subsequently, she completed both a surgical pathology fellowship and a gastrointestinal and liver pathology fellowship at the Brigham. Dr. Johncilla also served as chief resident in Anatomic Pathology at the Brigham. Dr. Johncilla is certified in Anatomic and Clinical Pathology by the American Board of Pathology and subspecializes in Gastrointestinal Pathology.

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Momin T. Siddiqui, MD

### CYTOPATHOLOGY

**Dr. Momin T. Siddiqui** joins us as **Assistant Professor (interim) of Pathology and Laboratory Medicine**. Dr. Siddiqui serves as Director of Cytopathology. He received his medical degree from

the Dow Medical College, Pakistan in 1989. Subsequently, he completed residency training in Anatomic and Clinical Pathology at the Loyola University Medical Center in 1996, followed by a

surgical pathology fellowship at the M.D. Anderson Cancer Center and a cytopathology fellowship at University of Texas Southwestern Medical Center. Dr. Siddiqui joins us from Emory University where he served as Divisional Director of Cytopathology and Director of their cytopathology fellowship training program. Dr. Siddiqui is certified in anatomic pathology and in cytopathology by the American Board of Pathology. Dr. Siddiqui's research interests are focused on the application of ancillary and molecular techniques in cytology specimens. He has published over 100 peer-reviewed articles as well as several books and book chapters. In the recent past his publications have focused on HPV testing, and lung and pancreatic tumors. He is currently serving on the Editorial Board of the journals *Diagnostic Cytopathology*, *Cancer Cytopathology*, *Acta Cytologica*, and the *Journal of the American Society of Cytopathology* and is an Associate Editor of *Diagnostic Cytopathology*. Dr. Siddiqui is also the Series Editor for "Essentials in Cytopathology," a well-known book series dedicated to cytopathology. He currently also serves on the Board of Directors of the American Society of Cytopathology and the Papanicolaou Society of Cytopathology. Dr. Siddiqui is a well-recognized speaker who contributes to teaching and promoting cytopathology by participating in seminars both nationally and internationally.

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Jonas Heymann, MD

### CYTOPATHOLOGY

**Dr. Jonas Heymann** joins us as **Assistant Professor of Pathology and Laboratory Medicine**. He received his medical degree from the Columbia University College of Physicians and Surgeons

in 2008. His medical school education was interrupted for one year, during which time he completed a Howard Hughes Medical Institute-sponsored research training fellowship in the Department of Pathology at Yale University School of Medicine. Subsequently, Dr. Heymann completed residency training in Anatomic and Clinical Pathology at NewYork-Presbyterian Hospital-Columbia University in 2012. This was followed by a cytopathology fellowship at NewYork-Presbyterian Hospital-Weill Cornell, and both surgical pathology and molecular genetic pathology fellowships at NewYork-Presbyterian Hospital-Columbia University. Dr. Heymann is certified in Anatomic Pathology, Clinical Pathology and Cytopathology by the American Board of Pathology. His most recent work has focused on the feasibility of PD-L1 staining in cytology specimens.

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Naga Guruju, MD

### CYTOGENETICS

**Dr. Naga Guruju** joins us as **Assistant Professor of Clinical Pathology and Laboratory Medicine**. Dr. Naga Guruju received his PhD in 2002 at Osmania University in his native

India. He completed a clinical cytogenetics fellowship at the University of Texas Southwestern Medical Center and received certification in clinical cytogenetics by the American Board of Medical Genetics and Genomics (ABMG). Dr. Guruju joins us from LabCorp, in Santa Fe, New Mexico.

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Wei Song, MD, PhD

### CLINICAL GENOMICS

**Dr. Wei Song** joined us as **Assistant Professor of Pathology and Laboratory Medicine**. Dr. Song received his medical degree from Shanghai University in his native China in 1993.

He received his PhD from the University of Pennsylvania in 2004. He spent two years as a Research Associate at the Howard Hughes Medical Institute at University of California at San Francisco. He trained in anatomic pathology at the University of Alabama, Birmingham and also at the University of Illinois in Chicago. Following completion of this training, he completed a molecular genetic pathology fellowship at Memorial Sloan Kettering and a surgical pathology fellowship at Tufts Medical Center. He is certified by the American Board of Pathology in Anatomic Pathology and in Molecular Genetic Pathology. Dr. Song joins us from SUNY Upstate Medical University where he was Director of their Next Generation Sequencing Diagnostics Laboratory. Dr. Song currently serves as Medical Director of the Clinical Genomics Laboratory and has been an integral participant in the development and roll out of EXACT-1, our NYS approved whole exome sequencing test.

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### REGIONAL HOSPITAL

**William H. Rodgers, MD, PhD** joins us as **Professor of Clinical Pathology and Laboratory Medicine** at Weill Cornell Medical College. He serves as Chairman of the Department of Pathology at NewYork-Presbyterian Queens. Previously, he had served as Chairman of Pathology at Lenox Hill Hospital.

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*William H. Rodgers, MD, PhD*

Dr. Rodgers graduated from the combined MD/PhD program at the University of Rochester where he completed his studies in 1983. Subsequently, he completed residency training in pathology at Strong Memorial Hospital, University of Rochester where he also served as Chief Resident and as the Wilmot Cancer Research Fellow. He has worked extensively in the clinical pathological diagnosis and translational research of early cancers for more than 25 years. He serves on national and international committees and review panels, in regard to tissue banking, biomarker studies in clinical cancer trials, and the identification of early cancers of the cervix, breast and ovary. His research interests include the biology of early carcinogenesis and tumor invasion. He is the past Chairman of the Pathology Committee of the Gynecology Oncology Group and the Chair of the Pathology Committee of NRG Oncology, NCI supported cooperative Oncology Groups. In this capacity, he has been an investigator on numerous clinical trials involving biomarkers in cancer treatment of the ovary and uterus; and prospective clinical trials of the use of biomarkers to define and diagnose early cervical glandular cancers. His main original contributions to the field of carcinogenesis include the observations that matrix metalloproteinase expression is a ubiquitous feature of normal proliferative tissues and that expression of the biomarker CAIX is a useful early marker of glandular cervical neoplastic lesions.

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## REGIONAL HOSPITAL

**Dr. Fumiko Konno, Assistant Professor of Clinical Pathology and Laboratory Medicine,** joins us as **staff pathologist** for NewYork-Presbyterian Queens. Dr. Konno, a graduate of Brynn Mahr (BA, 2000), received her MD (2009) from Drexel University and completed her Pathology Residency at New York University (Anatomic and Clinical Pathology, 2013), followed by fellowships in Oncologic Surgical Pathology, Cytopathology and Breast Pathology from 2014-16. Since completing these fellowships she has worked as a staff pathologist at CBL Path Inc. Dr. Konno is Board Certified in Anatomic and Clinical Pathology with special qualification in Cytopathology by the American Board of Pathology.

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## Faculty Promotions

**Domenick Falcone, PhD**  
**Hanna Rennert, PhD**  
**Wayne Tam, MD, PhD**  
**Annarita Di Lorenzo, PhD**  
**David Rickman, PhD**

### NEW LEADERSHIP

**Steven Salvatore, MD**  
**Rema Rao, MD**  
**Meredith Pittman, MD**  
**Matthew Greenblatt, MD, PhD**  
**Michael Hsu, MD, PhD**

**Professor of Pathology and Laboratory Medicine**  
**Professor of Pathology and Laboratory Medicine**  
**Professor of Pathology and Laboratory Medicine**  
**Associate Professor of Pathology and Laboratory Medicine**  
**Associate Professor of Research in Pathology and Laboratory Medicine**

**Director, Pathology Residency Training Program**  
**Associate Director, Pathology Residency Training Program**  
**Anatomic Pathology Education Coordinator**  
**Laboratory Medicine Education Coordinator**  
**Director, Laboratory for Advanced Cellular Engineering**

## Newly Awarded Pathology Grants

### ◆ National Institutes of Health (NIH) Exploratory/Development Grant

*Title: Defining the Cellular Oncogenome of Kaposi Sarcoma*  
 Principal Investigator: **Ethel Cesarman MD, PhD**  
 Period of Support: 08/01/2017 – 07/31/2019  
 Total Direct Costs: \$273,529

### ◆ The Daedalus Fund for Innovation Research Grant

*Title: Nucleoside Analogue Selectively Activated by Adenosine Kinase to Treat ADK-expressing Adenocarcinomas*  
 Principal Investigator: **Ethel Cesarman MD, PhD**  
 Period of Support: 09/01/2017 – 08/31/2019  
 Total Direct Costs: \$228,809

### ◆ The Leukemia & Lymphoma Society Mantle Cell Lymphoma Research Initiative

*Title: Longitudinal functional genomics in mantle cell lymphoma therapy and drug resistance*  
 Principal Investigator: **Selina Chen-Kiang, PhD**  
 Period of Support: 01/01/18 – 12/31/22  
 Total Direct Costs: \$2,083,330

### ◆ American Society of Hematology Bridge Grant

*Title: Chromatin remodeling and FOXO in targeting CDK4 in mantle cell lymphoma*  
 Principal Investigator: **Selina Chen-Kiang, PhD**  
 Period of Support: 10/01/2017 – 09/30/2018  
 Total Direct Costs: \$150,000

### ◆ Tri-Institutional Therapeutics Discovery Institute

*Title: Development of an Antibody Inhibitor of SLITRK5 for the Treatment of Osteoporosis*  
 Principal Investigator: **Matthew Greenblatt, MD, PhD**  
 Period of Support: 6/1/17-5/31/18  
 Total Direct Costs: \$54,951

### ◆ March of Dimes Basil O' Connor Starter Scholar Research Award

*Title: Defining the role of a Novel Periosteal Mesenchymal Stem Cell in Skeletal Morphogenesis and Development*  
 Principal Investigator: **Matthew Greenblatt, MD, PhD**  
 Period of Support: 4/1/17-3/31/19  
 Total Direct Costs: \$136,362

### ◆ Doris Duke Charitable Foundation Clinical Scientist Development Award (CSDA)

*Title: Epigenetic landscapes of rearranged driver-negative cancers*  
 Principal Investigator: **Marcin Imielinski, MD, PhD**  
 Period of Support: 7/1/17-6/30/20  
 Total Direct Costs: \$450,000

### ◆ STARR Cancer Consortium Research Grant

*Title: Deciphering signatures of broken DNA repair pathways in long-range whole genome sequences*  
 Principal Investigator: **Marcin Imielinski, MD, PhD**  
 Period of Support: 01/01/18-12/31/19  
 Total Direct Costs: \$833,333

### ◆ Tri-Institutional Therapeutics Discovery Institute

*Title: Identification of Novel Therapeutics for Treatment of N-MYC Driven Castrate Resistant Prostate Cancer*  
 Principal Investigator: **David Rickman, PhD**  
 Period of Support: 6/1/17-5/31/19  
 Total Direct Costs: \$200,000

### ◆ United States Department of Defense

*Title: Temporal Evolution of N-Myc Signaling and Early Targeting of the Neuroendocrine Phenotype in Prostate Cancer*  
 Principal Investigator: **David Rickman, PhD**  
 Period of Support: 9/30/17-9/29/20  
 Total Direct Costs: \$1,050,647

### ◆ National Institutes of Health (NIH) Specialized Program of Research Excellence

*Title: Weill Cornell Medicine (WCM) SPORC in Prostate Cancer*  
 Principal Investigator: **Mark A. Rubin, MD**  
 Period of Support: 8/30/17-7/31/22  
 Total Direct Costs: \$7,097,925

### ◆ National Institutes of Health (NIH) Research Grant

*Title: The V(D)J recombination reaction and its impact on lymphocyte development*  
 Principal Investigator: **Barry Sleekman, MD, PhD**  
 Period of Support: 04/01/2017 – 03/31/2022  
 Total Direct Costs: \$1,250,000

### ◆ National Institutes of Health (NIH) Research Grant

*Title: Discovering the molecular mechanisms that determine replicative lifespan*  
 Principal Investigator: **Jessica Tyler, PhD**  
 Period of Support: 09/30/2017 – 05/31/2021  
 Total Direct Costs: \$1,430,388

### ◆ National Institutes of Health (NIH) Research Grant

*Title: Harnessing the CRL4 ubiquitin ligase for antagonizing colorectal carcinogenesis*  
 Principal Investigator: **Pengbo Zhou, PhD**  
 Period of Support: 01/17/2017 – 12/31/2021  
 Total Direct Costs: \$1,679,989

### ◆ Cullinogen Inc. Sponsored Research Agreement

*Title: Validation of CUL4B mAbs*  
 Principal Investigator: **Pengbo Zhou, PhD**  
 Period of Support: 01/27/2017 – 12/31/2018  
 Total Direct Costs: \$173,913 ■

# Keynotes

by *Domenick J. Falcone, PhD*

► **Dr. Annarita Di Lorenzo** was invited to speak at the Gordon Research Conference on Glycolipid & Sphingolipid Biology in Italy (March, 2016). The title of her seminar was “Nogo-B Regulates Sphingolipid Homeostasis to Impact Vascular Functions.” Dr. Di Lorenzo also was invited to speak at Karolinska University (April, 2016), Stockholm, Sweden, Vanderbilt University School of Medicine (June, 2016), Nashville, TN, and New York Medical College (February, 2017), Valhalla, NY. In February 2017, she was a speaker at the Gordon Research Conference on Nitric Oxide (February, 2017), Ventura, CA, USA. The title of her talk was “Nogo-B regulates S1P/S1PR1/NO pathway to impact cardiovascular functions.”

► **Dr. Yi-Chieh Nancy Du** has continued to focus her research on understanding cancer metastasis in order to develop targeted therapies. Her lab identified the novel metastatic function of Bcl-xL. Bcl-xL is overexpressed in a variety of cancers. Bcl-xL has long been known for its function in regulating apoptosis during embryonic development and in pathological conditions. Any role that Bcl-xL might play in tumor metastasis has been ascribed to its anti-apoptotic function; i.e. Bcl-xL may increase metastasis by lending survival advantage to the tumor cells during the course of metastasis. However, Dr. Du's lab demonstrated that Bcl-xL's metastatic function is independent of its canonical anti-apoptotic activity and instead requires a novel nuclear function. Her novel findings offer a paradigm-shifting insight – that the metastatic function of Bcl-xL is attributed primarily to its nuclear function. Her research in Bcl-xL has led to a NIH R01 grant (1st percentile). Dr. Yi-Chieh Nancy Du was invited to give Grand Round at Rutgers Cancer Institute of New Jersey, a seminar at Columbia University, and a seminar in National Taiwan University, Taiwan.

► **Dr. Domenick J. Falcone** was promoted to Professor, and appointed the first Gary M. Sumers Education Scholar in recognition of his contribution to the medical school curriculum and medical education at WCM. Dr. Falcone continues to serve as co-director of the Essential Principles of Medicine (EPOM) course and Vice-chair of the Executive Medical College Curriculum Committee, basic science theme leader for the medical college curriculum, and leader of the Injury, Infection, Immunity and Repair learning unit of EPOM. During Convocation 2017, he received two teaching awards: The Medical Student Executive Council First Year Teaching Award and the 1st Year Visiting Faculty Excellence in Teaching Award, WMC-Qatar.

► **Dr. David Hajjar** was a nonresident senior fellow in the Center for Middle East Policy in the area of science and health policy at The Brookings Institute, Washington, DC; and he was promoted to University Distinguished Professor at Cornell. At the Medical College, “a University Professor is appointed by Cornell University, Ithaca, who is a distinguished and national recognized medical scholar who has extraordinary breadth of scholarly achievement and academic experience.”

► **Dr. Joshua Hayden** serves as President of the American Association of Clinical Chemistry New York Metro section. In May, Dr. Hayden co-hosted a two-day symposium on Laboratory Developed Tests, where he also gave a presentation titled: “Do we need LDT assays for accurate low level testosterone measurement?” In September, he chaired a workshop on Point-of-Care Testing and gave a presentation, “Maintaining Quality in POC through Data Integration with Core Lab Results.”

► **Dr. Syed Hoda** directed breast pathology-related courses at various national meetings including those of the ASCP, School of Breast Oncology and USCAP. In April 2017, Dr. Hoda presented Grand Rounds in The Department of Pathology at the University of Connecticut's Hartford Hospital. Two books co-authored by Dr. Syed Hoda were released earlier this year: Breast Pathology: Diagnosis by Needle Core Biopsy, 4th Edition (published by Wolters-Kluwer), and Diagnostic Liquid-Based Cytology, 1st Edition (published by Springer).

► **Dr. Yen-Michael Hsu** was an invited speaker at The 10th Pan Pacific Symposium on Stem Cells and Cancer Research, Hualien, Taiwan (April 15). The title of his talk was: “Development of Clinical Live-Imaging of Anti-CD19 Chimeric Antigen Receptor T Cells to Predict Anti-Tumor Effect and Toxicity.” At the same meeting, he served as moderator of the Cancer and New Drug Development session. At the AABB Annual Meeting in San Diego, CA (October 09, 2017) he presented: “Evaluation of peripheral blood hematopoietic progenitor cells potency by ALDH expression in poorly mobilized/collected autologous donors” and moderated the session on “New and Reliable Hematopoietic Stem Progenitor Cells Potency Assays? The Search for the Holy Grail.” Dr. Hsu received the Professional Engagement Program Rising Star Award from the AABB. In addition, he was selected to participate in the WCM Mentored Clinical Research Training Program (MCRCP) and Leadership in Academic Medicine Program (LAMP). Finally, he was certified as a Cell Processing

Laboratory Inspector (Foundation for Accreditation of Cellular Therapy, FACT).

► **Dr. Giorgio Inghirami** was invited to give three international seminars. “A bipartisan maladaptive liaison: the deleterious relationship of host and tumor cells in T-cell lymphoma” at the 2nd Nordic Meeting on Tumor Microenvironment in Lymphoma, Aarhus-Denmark, DK May 19th, 2017; “Patient Derived Tumor Xenograft: Are we ready to take fully advantage of these new models,” University of Naples, Italy, May 22nd, 2017; and “Cell lines vs. Xenografts vs. PDX,” Lugano, Switzerland June 13th, 2017.

► **Dr. Stephen Jenkins** proposed, co-convened, and presented at a workshop at the American Society of Microbiology Microbe 2017 Meeting entitled: The Microbes Are Winning: A Workshop on Antibiotic Resistance, Detection, Distribution (PK/PD), and Molecular Epidemiology of Significant Bacterial Pathogens. He has also been asked to present a workshop addressing the same issues for the upcoming 2018 meeting. In January, Dr. Jenkins presented a lecture entitled Antimicrobial Stewardship – A Multidisciplinary Approach – “The Path of Least Resistance” at the 24th Annual First Coast Infectious Disease/Clinical Microbiology Symposium in St. Augustine, FL. In May, Dr. Jenkins participated in the Weill Cornell Seminar in Infectious Disease course in Salzburg, Austria. This was a week-long course, organized in collaboration with the Medical University of Vienna, focused on delivering Infectious Disease and Clinical Microbiology lectures to physicians from Africa, Asia, Eastern Europe, and The Middle East. In June, Dr. Jenkins presented: Laboratory Practices and the New York City Experience with CRE, at the Michigan Public Health Institute's 3rd CRE Educational Symposium. In October, Dr. Jenkins presented: “Beta-Lactam Resistance among Gram-Negatives: Characterization, Detection, and Reporting” at the 24th Annual E.G. Scott Symposium in Newark, DE. He has been a voting member of the Clinical Laboratory Standards Institute Subcommittee on Antimicrobial Susceptibility Testing for the past several years and co-chaired its Methodology Working Group during that time frame. Finally, Dr. Jenkins is a member of the NY State Organ Transplant Infectious Diseases Working Group.

► **Dr. Cynthia Magro** conducted her annual comprehensive diagnostic course in dermatopathology

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# Keynotes

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## Dr. Cynthia Magro continued

with her colleagues, Drs. Martin C. Mihm, Jr. and A. Neil Crowson, held at The Venetian in Las Vegas, Nevada. In September, she was the guest speaker at the annual Harvard Dermatopathology Course conducted at the Copley Plaza Hotel in Boston, Massachusetts wherein she gave four lectures covering nevi of special sites, the psoriasiform reaction pattern and interface dermatitis of collagen vascular disease. At the American Society of Dermatopathology annual meeting in Baltimore, Maryland, she delivered a presentation at the morning symposium on October 29th, 2017 addressing select clonal histiocytopathy disorders. She has just completed the second edition of her biopsy interpretation book with Drs. Crowson and Mihm, which will be available to the reading public in March 2018. Her former trainee, Dr. Shabnam Momhaten, as well as current trainees Drs. Luke Olsen, Corey Georgesen and Ziv Schwartz, have given a number of presentations this year at meetings at the national and local levels. Dr. Magro will be participating in the first annual conference on Degos disease to be given in April, 2018 in Bethesda, Maryland.

Dr. Juan Miguel Mosquera was the Visiting Professor Lecturer for the 2016-2017 academic year at the Department of Pathology at Rush University (Chicago, IL, May 2017). Dr. Mosquera prepared a slide seminar for the Residents and presented his lecture "The Roles of the Pathologist in the Era of Precision Medicine." He was also a Guest Speaker at the XXXI Meeting of the Latin American Society of Pathology. He had two lectures that, in addition to the topic above, included the institutional experience in Precision Medicine (Cartagena, Colombia, August 2017). Dr. Mosquera served as Lead Reviewer of the USCAP Abstract Subcommittee for the Pathobiology Category (2015-2018 term), served as moderator of platform presentations in this category at the 106th Annual Meeting held in March 2017 in San Antonio, TX.

Dr. Hanna Rennert has continued to focus her research on understanding the genetics and improving molecular diagnosis of autosomal dominant polycystic kidney disease (ADPKD) using advanced next-generation sequencing based methodologies. In this capacity, she has been invited to present her work "Understanding next generation sequencing for polycystic kidney disease" at the FASEB Science Research Conference on Polycystic Kidney Disease in Big Sky, Montana, in June, 2017. Earlier this year she established a collaboration with Vela Diagnostics.

The goal of this collaborative study funded by Vela is to evaluate novel next generation sequencing-based methodologies for HIV genotyping and detection of drug resistant mutations. This year she has been invited to serve on a Roche Diagnostics Advisory Board for next generation sequencing. The purpose of this board is to understand the complexity, decision algorithm and workflow involved in molecular oncology testing.

Dr. David S. Rickman presented Grand Rounds at the Lerner Research Institute and Cleveland Clinic, Cleveland, Ohio (May 2017). The title of his seminar was "Targeting N-Myc driven neuroendocrine prostate cancer." In March, he presented "N-Myc drives Neuroendocrine Prostate Cancer" at the Sidney Kimmel Cancer Center, Philadelphia, PA. He was an invited symposium speaker at the French Association on Prostate Cancer Research (ARTP) 26th Meeting, Paris, France (November 2017). The title of his seminar was: "Lineage plasticity as a mechanism progression towards neuroendocrine prostate cancer." Dr. Rickman was also an invited symposium speaker at the German Cancer Society (AEK), 19th International Cancer Congress, Heidelberg, Germany, 2017. The title of his lecture was: "N-Myc driven neuroendocrine prostate cancer."

Dr. Teresa Sanchez presented her research at the Dean's Inaugural Symposium: Opportunities for Entrepreneurship and Academic Drug Development (October 2017). She also gave a keynote lecture at the 52nd Southeastern Regional Lipid Conference in Cashiers, NC (November 2017). The title of her seminar was: "Sphingosine-1-Phosphate Signaling in Stroke: Mechanistic Insights and Therapeutic Potential."

Dr. Surya Seshan attended the 17th Congress of the International Pediatric Nephrology Association in Iguacu Falls, Brazil (September 20-24, 2016) and gave three lectures. She served as a member of the Program Committee for the 3rd International Renal Pathology Conference (RPS & IS RTP sponsored) in New Delhi, India (February 10-12, 2017) and lectured on "Pathology of thrombotic microangiopathy." Dr. Seshan gave 4 lectures at the Pediatric Nephrology Seminar (ASP & IPNA sponsored) in Miami, Florida, March 2-5, 2017. She was a member of an International Consensus meeting: A proposal for standardized grading of chronic changes in native kidney biopsy specimens and the Banff Working Group on "Histopathological consensus criteria for pre-implantation kidney biopsies." Dr. Seshan co-

directed and lectured at the 5th International Summer School in Renal Pathology in Bari, Italy (July 3-14, 2017). She delivered Medical Grand Rounds at Crozer-Chester Medical Center, Upland, PA (September 8th, 2017), on "Update on thrombotic microangiopathies and atypical HUS." Dr. Seshan is a member of the Renal Pathology Committee of the International Society of Nephrology and served as the abstract reviewer for "Kidney and Genitourinary Pathology" for the College of American Pathologists Annual Meeting in 2017.

Dr. Momin Siddiqui was elected to the Executive Board of the American Society of Cytopathology in November 2017 for a four-year term. Earlier in March 2017, he was elected as the Secretary and Executive Board member of the Papanicolaou Society of Cytopathology for a three-year term. In September 2017, at the American Society of Clinical Pathology Annual Meeting in Chicago, Dr. Siddiqui was a Seminar faculty member and presented at the "Surprises and Conundrums during Everyday Practice of Cytopathology" and "Basic and Advanced Organ Based Cytopathology: A Progressive Learning Approach," sessions. He was also a Workshop faculty member at the same meeting and presented "Practical Approach of Sub-classification of NSCLC in FNA Samples Using Current WHO Criteria. Evidence Based Practice and Role of IHC Markers." Dr. Siddiqui was also appointed as Chair of the Constitutional and Bylaws Committee of the Papanicolaou Society of Cytopathology. He was also appointed a member of the Research and Current Concepts Committee of the American Society of Cytopathology and Scientific Program Committee of the Papanicolaou Society of Cytopathology in 2017.



Jessica Tyler, PhD

Dr. Jessica Tyler was the organizer of the Keystone Symposium on Epigenetics and Human Disease, Progress from Mechanisms to Therapeutics, Seattle, WA (Jan. 29th-Feb. 2nd 2017). She was an invited speaker at the Max Planck Institute for Biology of Ageing, Cologne, Germany (Sept. 15th); the ATW2017 meeting in Milan, Italy (March 20-24th); Department of Biochemistry, University of Puerto Rico Medical School, San Juan, PR (May 19th); and INBRE/COBRE Symposium San Juan PR (May 19th-21st).

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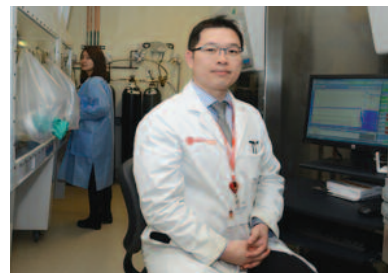
## Keynotes

### ► Dr. Jessica Tyler *continued*

Special Congratulations to Dr. Tyler, who has been elected as a fellow of the American Association for the Advancement of Science (AAAS). Dr. Tyler was one of 396 scientists elected this year as fellows of the AAAS, the world's largest general scientific society. The fellowship recognizes members for their outstanding scientific or social efforts to advance science and its applications. Dr. Tyler is being honored for contributions to the field of epigenetics—the study of biological changes outside the DNA sequence that impact gene expression. Her research has illuminated the genetic and molecular underpinnings of epigenetic regulation of genome activity and aging.

► Dr. Rhonda Yantiss serves as Chief of the Gastrointestinal Pathology Service at Weill Cornell Medical College. This year, she had a number of national and international speaking engagements, including presentations at Scientific Symposiums International, Kohala Coast, HI; the 2017 United States and Canadian Academy of Pathology Annual Meeting in San Antonio, TX; Bushpath Diagnostic Surgical Pathology Course, Pilanesburg, South Africa; Diagnostic Pathology Updates of the United States and Canadian Academy of Pathology, Halifax, Nova Scotia; the 14th World Conference of OESO, Geneva, Switzerland; and the 14th Annual CME Meeting with Foreign Guests, Academie Internationale de Pathologie, Division Francaise, Paris, France. She also directed the Tutorial on Pathology of the GI Tract, Pancreas, and Liver in New Orleans, LA. ■

## Laboratory for Advanced Cellular Engineering (LACE)



Yen-Michael S. Hsu, MD, PhD  
Director, Laboratory for Advanced Cellular Engineering.

The Department is pleased to announce the opening of our new cGMP facility, aka LACE. The LACE is an expansion of NYP/WCMC Cellular Therapy Laboratory services that focuses on providing a current good manufacturing practice (cGMP) platform for manufacturing cell-based investigation new drug (IND) to be used in human clinical trials. In addition, the LACE quality assurance unit will also provide consultative services to support preclinical research and development in preparation for Phase I/II clinical trials using cellular therapies, including FDA IND filing, clinical translation of research protocols, and process development/validation, etc. Rigorous regulatory compliance maintained by LACE is critical for ensuring a safe and controlled process to generate consistent and reliable cell therapy products. LACE has 3 ISO 7 cleanroom compartments, including the central processing room (30+ air changes per hour with 100 percent new HEPA-filtered air) positively pressure with respect to the external corridor. Among other clinical equipment optimized for clinical human cell processing, LACE has a unique 14-foot long cGMP grade cell processing isolator (ISO 5) that will allow hypoxic cellular manipulation by multiple concurrent operators. This module has full control and monitoring of environmental factors that are completely customizable.

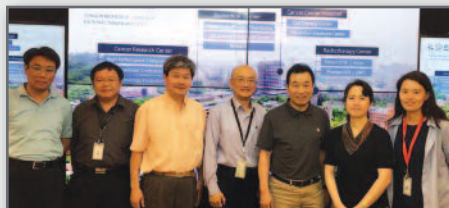
The LACE is currently accredited by the Foundation for the Accreditation of Cellular Therapy (FACT) and College of American Pathologists (CAP). The LACE technologist staff are New York State licensed with experience working with human hematopoietic progenitor cells immune effector cells, and other cell types.

► 212.746.2212 or  
ysh9001@med.cornell.edu ■

## Global travel itineraries from our renowned pathology faculty



▲ Dr. Ethel Cesarman was an invited speaker at the Gordon Research Conference on Viruses and Cells held in Tuscany, Italy in May 2017. Her entire laboratory also traveled to Berlin, Germany to attend the International Conference of KSHV and related agents.



▲ Dr. Nancy Du (far right) gave a YL Visiting Professor Seminar in National Taiwan University, Taiwan in August 2017.



◀ Dr. Cesarman (middle) with lab members.



▲ Dr. Rhonda Yantiss served as Co-Director, Bushpath Diagnostic Surgical Pathology Course, Pilanesberg National Park, South Africa. (l-r) Jeff Myers, Rhonda Yantiss, Joel Greenson, Jonathan Epstein, Volkan Adsay, Tomas Slavik).

► Dr. Michael Hsu traveled to Taiwan (ROC) where he served as a session moderator at the international meeting (10th Pan Pacific Symposium on Stem Cells and Cancer Research).



Dr. Melissa Cushing traveled to Florence, Italy in April 2017, to attend the NATA (Network for the Advancement of Patient Blood Management, Haemostasis and Thrombosis) meeting. She won the best abstract award for her presentation entitled: Red Blood Cell Order Alert Override Justifications.



Dr. Matthew Greenblatt traveled to the UK for the UCB New Medicines Supernetwork conference in July 2017.

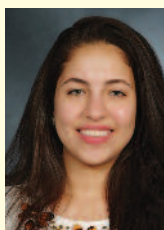
## Residents' Corner

### Welcome to our New Residents



**Victoria Costa, MD  
PGY-1 (AP/CP)**

Dr. Costa graduated in May from The George Washington University School of Medicine. She received her BA (Classical Studies) in 2013 also from The George Washington University.



**Sarah Elsoukary, MD  
PGY-1 (AP/CP)**

Dr. Elsoukary graduated in April from the Weill Cornell Medicine in Qatar. She received her pre-medical program certificate in 2013 from WCM in Qatar.



**David Kim, MD  
PGY-1 (AP/CP)**

Dr. Kim graduated in May from Drexel University College of Medicine. He received his BA (Philosophy) in 2011 from New York University.



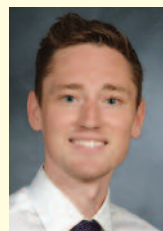
**Xilu (Lucy) Ma, MD  
PGY-1 (AP/CP)**

Dr. Ma graduated in May from St. George's University School of Medicine. She received her BS (Human Biology) in 2013 from the University of Toronto.



**Gregory Mullokandov,  
MD, PhD  
PGY-1 (CP/EP)**

Dr. Mullokandov graduated in May from Icahn School of Medicine at Mount Sinai. He also received his PhD in 2014 from Icahn School of Medicine at Mount Sinai. He received his BA (Biochemistry) in 2007 from Columbia University.



**William Towne, MD  
PGY-1 (AP/CP)**

Dr. Towne graduated in May from the Lewis Katz School of Medicine at Temple University. He received his BA (Biochemistry) in 2012 from Oberlin College.

### Visit our Residency Program on Facebook



[www.facebook.com/cornellpatholresidencypgm](http://www.facebook.com/cornellpatholresidencypgm)



## Eighth Annual Residents' Research Day

The Eighth Annual Residents' Research Day was held on Wednesday, May 3, 2017. The two winners of the oral presentations were:



#### ▲ Dr. Patrick McIntire

*Quality, Not Quantity: 10X Hot-Spot (HS) Analysis of Lymphocyte Markers (CD3, CD8, CD4, CD20) in Tumors-Infiltrating Lymphocytes (TILs) is Superior to Whole Tumor (WT) Analysis in Triple-Negative Breast Cancer (TNBC).*

(l-r) Dr. Daniel M. Knowles, Dr. Patrick McIntire.

#### ▼ Dr. Ami Patel

*Evaluation of Sentinel Lymph node (SLN) in Classic Invasive Lobular Carcinoma (cILC); Study of 560 Cases Indicates Need for CK Staining and Inapplicability of Size Criterion (i.e.,  $\leq/\geq 0.2\text{mm}$ ) to Distinguish pNOi+ from pNmi for Precise Staging.*

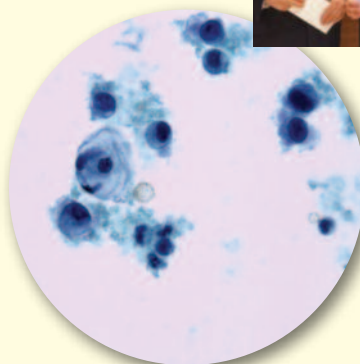
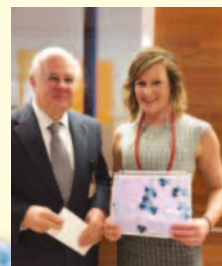
(l-r) Dr. Daniel M. Knowles, Dr. Ami Patel.



#### ► Dr. Erika Hissong

*Winner of the digital photo contest for the slide, "Finding Nemo."*

(l-r) Dr. Daniel M. Knowles, Dr. Erika Hissong.



Dr. Erika Hissong's slide, "Finding Nemo."

## Fellows

### Welcome to our New Fellows



**Jordan Baum, MD**  
**Molecular Genetics**

Dr. Baum graduated in 2013 from Indiana University. She completed her AP/CP residency at NewYork-Presbyterian/WCM, where she also served as Chief Anatomic Pathology Resident.

Dr. Baum is currently our Molecular Genetics fellow and will be remaining at NYP/WCM for a Breast Pathology fellowship next year.



**Esther Cheng, DO**  
**Breast Pathology**

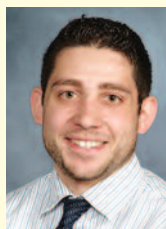
Dr. Cheng graduated in 2013 from New York College of Osteopathic Medicine. She completed her AP/CP residency training at NewYork-Presbyterian/Weill Cornell Medicine, prior to her Breast Pathology fellowship.



**Brianne Daniels, MD**  
**Dermatopathology**

Dr. Daniels graduated in 2013 from Touro University California. She was a post-doctoral research fellow from 2011-2012 at the University of California. In 2013, she joined

the AP/CP pathology residency-training program at the University of California. This past June, she completed a postdoctoral Research fellowship at the University of California.



**Robert DeSimone, MD**  
**Transfusion Medicine**

Dr. DeSimone graduated in 2013 from Stony Brook University School of Medicine. He completed his AP/CP residency here at NewYork-Presbyterian/Weill Cornell Med-

icine, where he also served as Chief Clinical Pathology Resident. This year he is our New York Blood Center/Weill Cornell Medicine Transfusion Medicine fellow.



▲ **Dr. David Kim**, award recipient (center).



**Daher Hajie, MD**  
**Hematopathology**

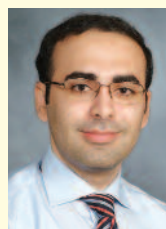
Dr. Hajie graduated in 2009 from Icahn School of Medicine at Mount Sinai. He joined the AP/CP residency-training program at New York University and graduated from the program in June.



**Allen Mirafior, MD**  
**Dermatopathology**

Dr. Mirafior graduated in 2012 from Tulane University School of Medicine. Dr. Mirafior subsequently joined an Internal Medicine program, prior to transferring to an AP/CP resi-

dency-training program at Dartmouth-Hitchcock Medical Center, where he graduated in June.



**Mustafa Namir Al-Kawaaz, MD**  
**Hematopathology**

Dr. Al-Kawaaz graduated in 2013 from Weill Cornell Medical College in Qatar. He joined our AP/CP residency-training program in July 2013 and graduated from the program in June.



**Kyung Park, MD**  
**Genitourinary Pathology**

Dr. Park graduated in 2010 from Ross University School of Medicine. In April 2010, she joined the laboratory of Dr. Mark Rubin as a research fellow. She then joined our AP/CP

residency-training program and graduated in June 2016 followed by a Molecular Genetics fellowship that was completed in June.



**Dianne Sung, MD**  
**Gynecological Pathology**

Dr. Sung graduated in 2012 from Rutgers-Robert Wood Johnson Medical School. She joined the AP/CP residency-training program at NewYork-Presbyterian Hospital-Columbia

University, followed by a one-year Surgical Pathology fellowship that was completed in June.



**Lorene Yoxtheimer, MD**  
**Cytopathology**

Dr. Yoxtheimer graduated in 2009 from University of Toledo College of Medicine. From 2009-2011, she was a surgical resident at Drexel University, prior to transferring to the

AP/CP pathology residency-training program at the University of Toledo College of Medicine. Dr. Yoxtheimer completed her pathology residency in June. ■

### Congratulations to our Graduate Staff of the Month

**Dr. David Kim**, our PGY-1 AP/CP resident was the recipient of the NYP Resident award for October 2017. He was nominated by Ms. Kathleen Crowley, the blood bank manager, for his timely assistance in helping out an ailing blood bank staff. Each month at the Leadership Town Hall Meeting, leadership recognizes one employee from each campus who exemplifies our motto "We Put Patients First," as well as the NYP Values: Respect, Teamwork, Excellence, Empathy, Innovation and Responsibility. The Resident of the Month recipients are invited to the Key Personnel meetings, are photographed with senior leaders. In addition, the Resident of the Month Award winners are featured on the NYP Infont and their names are inscribed on an honorary plaque that is displayed in a prominent location in the Hospital to honor their achievement. *Congratulations Dr. Kim and keep up the good work!*



**Volume 24 • February 2018**

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The Pathologist is an annual publication of Pathology and Laboratory Medicine at Weill Cornell Medicine.

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# Faculty Publications in 2017

K, Danko J, O'Neil D, Metcalf JA, King K, Burgess TH, Aga E, Lane HC, Hughes MD, Davey RT; IRC002 Study Team (**Cushing MM**, member): Immune plasma for the treatment of severe influenza: an open-label, multicentre, phase 2 randomised study. *Lancet Respir Med* 5:500-511, 2017.

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Mulvey JJ, Matnani R, **Cushing MM**: Historical ABO blood group discrepancy: A blessing in disguise to unravel a medical identity theft. *Transfusion* 57: 1096-1097, 2017.

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**Ginter PS**, McIntire PJ, Cui X, Irshaid L, Liu Y, Chen Z, Shin SJ: Folate receptor alpha (FOLR1) expression is associated with increased risk of recurrence in triple-negative breast cancer (TNBC). *Clin Breast Ca Epub ahead of print*.

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## CME Conference Calendar 2018-2019

### NEW YORK, NY

**The Papanicolaou and Frost 2018 Cytopathology Tutorial: A Weill Cornell and Johns Hopkins Partnership in Excellence**

**July 26-27, 2018**

► Course Director: Momin T. Siddiqui, MD, FIAC  
► Associate Course Director: Syed Z. Ali, MD, FRCPath, FIAC

► Targeted Audience  
Cytopathologists, pathologists, residents and cytotechnologists

► Course Goals and Objectives  
This 2-day course is designed to provide an in-depth discussion of current criteria and changing concepts in Diagnostic Cytopathology.

### MIAMI, FL

**10th Annual Symposium Tutorial on the GI Tract, Pancreas and Liver**

**November 12-16, 2018**

► Course Director: Rhonda K. Yantiss, MD  
► Associate Course Director: Jose Jessurun, MD

► Targeted Audience  
General surgical pathologists and pathologists-in-training

► Course Goals and Objectives  
This 5-day course is designed to update physicians on advances in our understanding of gastrointestinal diseases, address problems faced during the pathologic evaluation of tissue samples, and provide pathologists with a framework for interpretation of both histologic patterns of disease and results of molecular analyses.

### NAPLES, FL

**Tutorial on Neoplastic Hematopathology**

**January 21-25, 2019**

► Course Director: Daniel M. Knowles, MD  
► Associate Course Director: Attilio Orazi, MD

► Targeted Audience  
Pathologists, pathologists-in-training and medical oncologists/hematopathologists

► Course Goals and Objectives  
This 5-day course is designed to update physicians on the latest advances in Neoplastic Hematopathology.

**To Register/More Information**  
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