Letter from the Chair

Dear Colleagues,

I would like to welcome you all to the new academic year that started after a busy summer full of events and accomplishments for our department.

Initially, we hosted a very successful 6th annual Pathology retreat in June. The retreat is usually a great opportunity for our community to discuss ongoing research and promote the sense of community and collaborative spirit, that are crucial for our department culture. This year Drs. Feske and DeLair organized the event and did a remarkable job in integrating Clinical, Translational and Basic research in an intense one day program full of outstanding talks. Six Trainees (PhD, Postdoc, Residents and Fellows) were selected among several applicants to present their research and four other trainees won the “best poster” section. I encourage you to meet them and read about their studies in the Spotlight section of this issue.

The annual Immunology and Inflammation (I&I) retreat also took place in June. Organized by Drs. Reizis, Schwab and Krogsaard, this event featured an outstanding group of local and external speakers. The program highlighted research by junior faculty members from NYU and other institutions in New York City, giving trainees an opportunity to interact with them and learn more about this challenging yet exciting career stage. The program had a special session dedicated to tumor immunology and a really interesting poster section. For more details, please read this issue of Spotlight to meet the winners for best poster award and for more details about the program.

The summer was also a time of welcoming our new graduate students in the I&I (Immunology and Inflammation) and MOTI (Molecular Oncology and Tumor Immunology) research training programs and our new crop of Pathology Residents and Fellows for academic year 2019-20. More information can be found in the New & Notable section of this issue.

Our department keeps growing in space. All moves announced before the summer occurred smoothly consolidating our pathology labs in Smilow and New Science buildings. The Possemato and Park labs moved to Smilow 6 this July, joining the Papagiannakopoulos, Feske and Koralov labs that had already moved to Smilow 5 in the Spring. Now Smilow 3, 5, 6 and 13 floors are part of our Department making Smilow 3, 5 and 6 entirely pathology floors. The Reizis lab moved to the Science building 4th floor, joining the Naik lab.

We are not just growing in space but also in our group of talented Clinical and Research Faculty! On the research side, we recently welcomed Dr. Jun Wang, who started as Assistant Professor in our department. His lab is located on the 3rd floor of Smilow. Jun joined NYU after a really productive postdoc in the Chen lab at Yale, where he published remarkable results studying immune suppressors for cancer immunotherapy. We are thrilled to have him on our team and we are looking forward to seeing his impressive research skills further strengthen our core of talented investigators. On the clinical side, we were fortunate to add a number of talented attendings, who are experts in different sub-specialties. Please join me to welcome Drs. Negin Shafizadeh, Deepthi Hoskoppal, Margaret Cho and Melissa Guzzetta and wish them all the success in our Department.

Finally, I would like to congratulate some of our faculty members who made remarkable achievements during the last few months and these include:

- Drs. Eva Hernando-Monge, George Jour and Michelle Krogsaard were part of the NYU multidisciplinary team that received the National Cancer Institute (NCI) P50 Specialized Programs of Research Excellence (SPORE) grant. The program will design tools (biomarkers) to help predicting whether Immunotherapy treatments in Melanoma will be effective for a given patient.

- Dr. Syed Hoda, Assistant Professor, Director, Surgical Pathology, NYU Langone Orthopedic Hospital, was named as one of the Top 100 of The Pathologist’s 2019 Power List.

- Dr. Richard Possemato, Assistant Professor, won the student-led mentoring award recently created by the Sackler Institute for Graduate Biomedical Science.

I encourage you to read more about these accomplishments and other department events and activities in this newsletter. Please feel free to contact me personally and the entire team with any questions or comments—I would love to hear from you.

Best regards,

Iannis
Publications

In Chronological Order

Schwartz, Christopher J; Modi, Lopa; Simsir, Aylin; Sun, Wei. 'Incidental giardiasis in a transduodenal fine-needle aspiration for suspected hilar liver mass'. Diagnostic cytopathology. 2019

Jain, Deepali; Nambirajan, Aruna; Borczuk, Alain; Chen, Gang; Minami, Yuko; Moreira, Andre L; Motoi, Noriko; Papotti, Mauro; Rekhtman, Natasha; Russell, Prudence A; Savic Prince, Spasenija; Yatabe, Yasushi; Bubendorf, Lukas. 'Immunocytochemistry for predictive biomarker testing in lung cancer cytology'. Cancer cytopathology. 2019

Tuen, Michael; Bimela, Jude S; Banin, Andrew N; Ding, Shilei; Harkins, Gordon W; Weiss, Svenja; Itri, Vincenza; Durham, Allison R; Porcella, Stephen F; Soni, Sonal; Mayr, Luzia; Meli, Josephine; Torimiro, Judith N; Tongo, Marcel; Wang, Xiaohong; Kong, Xiang-Peng; Nádas, Arthur; Kaufmann, Daniel E; Brumme, Abrina L; Nanfack, Aubin J; Quinn, Thomas C; Zolla-Pazner, Susan; Redd, Andrew D; Finzi, Andrea; Gorny, Miroslaw K; Nyambi, Pauline; McMillan, Sajmath; Olorunmuyiwa, Folami; Phillips, Kjersti; Raisanen, Jack M; Xing, Chao; Snuderl, M. 'Immune Correlates of Disease Progression in Linked HIV-1 Infection'. Frontiers in immunology. 2019


Surface-type chondromyxoid fibroma in an elderly patient: a case report and literature review. Harrington KA, Hoda S, La Rocca Vieira R. Skeletal Radiol. 2019


Richardson, Timothy E; Patel, Seema; Serrano, Jonathan; Sathe, Adwait Amol; Daoud, Elena V; Oliver, Dwight; Maher, Elizabeth A; Madrigales, Alejandra; Mickey, Bruce E; Taxter, Timothy; George, White, Charles L; Raisanen, Jack M; Xing, Chao; Snuderl, Matija; Hatanpaa, Kimmo J. 'Genome-Wide Analysis of Glioblastoma Patients with Unexpectedly Long Survival'. Journal of neuropathology & experimental neurology. 2019

Gaudino, MF; Lorusso, R; Ohmes, L B; Narula, N; McIntire, P; Gargiulo, A; Bucci, MR; Leonard, Jeremy; Rahouma, Mohamed; Di Franco, Antonino; He, Guo-Wei; Girardi, Leonard N; Tranbaugh, Robert F; Di Lorenzo, Annarita. 'Open radial artery harvesting better preserves endothelial function compared to the endoscopic approach'. Interactive cardiovascular & thoracic surgery. 2019


Darvishian, Farbod; Ozderem, Ugur; Adams, Sylvia; Chun, Jennifer; Pirraglia, Elizabeth; Kaplowitz, Elianna; Guth, Amber; Axelrod, Deborah; Shapiro, Richard; Price, Alison; Troxel, Andrea; Schnabel, Freya; Roses, M, Ohman-Strickland P, Hameed M, Snuderl M. Neuro Oncol. 2019

Richardson, Timothy E; Patel, Seema; Serrano, Jonathan; Sathe, Adwait Amol; Daoud, Elena V; Oliver, Dwight; Maher, Elizabeth A; Madrigales, Alejandra; Mickey, Bruce E; Taxter, Timothy; George, White, Charles L; Raisanen, Jack M; Xing, Chao; Snuderl, Matija; Hatanpaa, Kimmo J. 'Genome-Wide Analysis of Glioblastoma Patients with Unexpectedly Long Survival'. Journal of neuropathology & experimental neurology. 2019

Gaudino, MF; Lorusso, R; Ohmes, L B; Narula, N; McIntire, P; Gargiulo, A; Bucci, MR; Leonard, Jeremy; Rahouma, Mohamed; Di Franco, Antonino; He, Guo-Wei; Girardi, Leonard N; Tranbaugh, Robert F; Di Lorenzo, Annarita. 'Open radial artery harvesting better preserves endothelial function compared to the endoscopic approach'. Interactive cardiovascular & thoracic surgery. 2019

Daniel. 'Tumor-Infiltrating Lymphocytes in a Contemporary Cohort of Women with Ductal Carcinoma In Situ (DCIS)'. Annals of surgical oncology. 2019


Hou, Liming; Wang, Yating; Liu, Yu; Zhang, Nan; Shamovsky, Ilya; Nuñez, Evgeny; Tian, Bin; Dynlacht, Brian David. 'Paf1C regulates RNA polymerase II progression by modulating elongation rate'. Proceedings of the National Academy of Sciences of the United States of America (PNAS). 2019

Cho, Woo Cheal; Jour, George; Aung, Phyu P. 'Role of angiogenesis in melanoma progression: Update on key angiogenic mechanisms and other associated components'. Seminars in cancer biology. 2019

Tsao, Ming-Sound; Carbone, Michele; Galateau-Salle, Françoise; Moreira, Andre L; Nicholson, Andrew G; Roden, Anja C; Adjei, Alex A; Aubry, Marie-Christine; Fennell, Dean A; Gomez, Daniel; Harpole, David; Hesdorffer, Mary; Hirsch, Fred R; Liu, Geoffrey; Malik, Brian David; Shamovsky, Ilya; Nudler, Evgeny; Tian, Bin; Dynlacht, Brian David. 'Paf1C regulates RNA polymerase II progression by modulating elongation rate'. Proceedings of the National Academy of Sciences of the United States of America (PNAS). 2019

Cho, Woo Cheal; Jour, George; Aung, Phyu P. 'Role of angiogenesis in melanoma progression: Update on key angiogenic mechanisms and other associated components'. Seminars in cancer biology. 2019

Cushing, Melissa M; Pagano, Monica B; Jacobson, Jessica; Schwartz, Joseph; Grossman, Brenda J; Kleinman, Steven; Han, Miah A; Cohn, Claudia S. 'Pathogen reduced plasma products: a clinical practice scientific review from the AABB'. Transfusion. 2019


Soni, Chetna; Reizis, Boris. 'Self-DNA at the Epicenter of SLE: Immunogenic Forms, Regulation, and Effects'. Frontiers in immunology. 2019

Lignitz, Luca; LeBoeuf, Sarah E; Homer, Harrison; Jiang, Shaowen; Askenza, Manor; Karakoussi, Triantafyllia R; Pass, Harvey I; Bhutkar, Arjun J; Tsirigos, Aristotelis; Ueberheide, Beatrix; Sayin, Volkmar; Papagiannakopoulos, Thales; Pagano, Michele. 'Nrf2 Activation Promotes Lung Cancer Metastasis by Inhibiting the Degradation of Bach1'. Cell. 2019

Del Rey Gonzalez, Monica; Park, Christopher Y. 'Deconstructing myelodysplastic syndromes'. Blood. 2019

Yu, Minjun; Scherwitzl, Iris; Opp, Silvana; Tsirigos, Aristotelis; Meruelo, Daniel. 'Molecular and metabolic pathways mediating curative treatment of a non-Hodgkin B cell lymphoma by Sindbis viral vectors and anti-4-1BB monoclonal antibody'. Journal for immunotherapy of cancer. 2019

Cao, Wenhui; Sharma, Meenal; Imam, Rami; Yu, Jianguo. 'Study on Diagnostic Values of Astrocyte Elevated Gene 1 (AEG-1) and Glyceric 3 (GPC-3) in Hepatocellular Carcinoma'. American journal of clinical pathology. 2019

Kim, Joon-Chul; PÅ©rez-HernÁ©ndez Duran, Marta; Alvarado, Francisco J; Maurya, Svetlana R; Montnach, Jerome; Yin, Yandong; Zhang, Mingliang; Lin, Xiaoming; Vasquez, Carolina; Heguy, Adriana; Liang, Feng-Xia; Woo, Sun-Hee; Morley, Gregory E; Rothenberg, Eli; Lundby, Alicia; Valdivia, Hector H; Cerrone, Marina; Delmar, Mario. 'Disruption of Ca2+ Homeostasis and Cx43 Hemichannel Function in the Right Ventricle Precedes Overt Arrhythmic Cardiomyopathy in PKP2-Deficient Mice'. Circulation. 2019

Chen-Engerer, Hsing-Jung; Hartmann, Jana; Karl, Rosa Maria; Yang, Jun; Feske, Stefan; Konnerth, Arthur. 'Two types of functionally distinct Ca2+ stores in hippocampal neurons'. Nature communications. 2019

Banin, Andrew N; Tuen, Michael; Bimela, Jude G; Tong, Marcel; Zappile, Paul; Khodadadi-Jamayran, Alirea; Nanfack, Aubin J; Okonko, Iheanyi O; Meli,
Josephine; Wang, Xiaohong; Mbanya, Dora; Ngogang, Jeanne; Gorny, Miroslaw K; Heguy, Adriana; Fokunang, Charles; Duerr, Ralf. ‘Near full genome characterization of HIV unique recombinant forms in Cameroon reveals dominant CRF02_AG and F2 recombination patterns’. *Journal of the International AIDS Society*. 2019

Zubin Maslov, Petra; Narula, Navneet; Narula, Jagat. ‘Somatostatin receptor imaging in active cardiac sarcoidosis: Would less be enough?’. *Journal of nuclear cardiology*. 2019

Strauss, H William; Nakahara, Takehiro; Narula, Navneet; Narula, Jagat. ‘Vascular Calcification: The evolving relationship of vascular calcification to major acute coronary events’. *Journal of nuclear medicine*. 2019

Mirchia, Kanish; Snuderl, Matija; Galbraith, Kristyn; Hatanpaa, Kimmo J; Walker, Jamie M; Richardson, Timothy E. ‘Establishing a prognostic threshold for total copy number variation within adult IDH-mutant grade II/III astrocytomas’. *Acta neuropathologica communications*. 2019
Featured Publications

Molecular and metabolic pathways mediating curative treatment of a non-Hodgkin B cell lymphoma by Sindbis viral vectors and anti-4-1BB monoclonal antibody

Minjun Yu, Iris Scherwitzl, Silvana Opp, Aristotelis Tsirigos, Daniel Meruelo

Chemotherapy and immunotherapy [monoclonal antibodies (mAbs) and chimeric antigen receptor specific T cells, CAR-T] have been used to treat non-Hodgkin B cell lymphoma. For both conventional chemotherapy and immunotherapy, tumor relapse is a common problem. Establishment of a potent, safe, but also long-lasting immune response is a major goal of B cell lymphoma treatment. CAR-T therapy is a novel immune therapy used to treat diffuse large B cell lymphoma. However, major drawbacks to current CAR-T therapy include: risk of immune incompatibilities; quality control for harvesting T cells; time involved in generating CAR-T cells, which need to be made to specific antigens on the tumor cells; off-target effects; the possibility that the treatments cause a cytokine storm and the high cost. Therefore, there is a need to investigate alternative and reliable methods for treating B cell lymphoma.

Oncolytic virus (OV) therapy has become a novel immunotherapeutic approach to treat cancer. A rationale for oncolytic viruses is that they can infect and lyse the tumor cells. They can be made to selectively replicate in tumor cells but most OVs encounter a number of barriers to systemic administration. Once lysed by OVs, tumor cells release tumor associated antigens (TAAs) that can stimulate cytotoxic T cells. OV infection also induces an inflammatory response that helps to trigger an immune anti-tumor response. Several OV clinical trials are underway and have shown promising results. However, whether OV therapy can effectively treat tumors that they are unable to infect remains an unresolved limitation.

Sindbis virus (SV) belongs to alphavirus genus and is one type of OV. Though it does not lyse infected tumor cells, it can cause their apoptotic death. It offers several important benefits. SV is known as one of the least virulent alphaviruses with clinical signs and symptoms usually unapparent. It has been estimated that there are 17 times more subclinical than symptomatic SV infections. In general, when symptoms do occur in humans they consist of a self-limiting, mild, febrile disease with vesicular exanthema and arthralgia from which most patients recover within 14 days. The disease is in part self-limiting because SV is an RNA virus that does not integrate in the host genome and hence its presence is transitory. The lack of an integrative step in its replication cycle also avoids insertional mutagenesis risks. In addition, our SV vectors were generated from the laboratory strain AR339, which is not known to cause disease in humans. We further attenuated these vectors by rendering them replication-defective.

SV vectors can target tumors systemically and can reach metastatic tumor cells throughout the body. They can target tumors without infecting normal tissues. However, susceptibility to infection by SV vectors depends on a number of factors including laminin receptor expression and distribution, as well as, defects in IFN signaling in tumors. Here we document that SV vectors can effectively help cure tumors that they are unable to infect.

Our present studies use an antibody directed at 4-1BB, a T cell costimulatory molecule. 4-1BB agonist stimulation greatly enhances NK and cytotoxic T cell activity. We use A20 tumor cells we to model non-Hodgkin B cell lymphoma, as these cells were derived from a spontaneously arising reticulum cell sarcoma (a non-Hodgkin lymphoma) in a BALB/c mouse.

We show that systemically disseminated A20 lymphoma can be completely cured by SV plus α4-1BB mAb combination therapy without the need to produce a SV that encodes a TAA known to be present in the A20 lymphoma cells. Further, neither intratumoral injection of the SV vectors nor infection of the tumors is required. This approach overcomes limitations of other OVs and does not require the preparation of antigen-specific CAR-T cells.
Study on Diagnostic Values of Astrocyte Elevated Gene 1 (AEG-1) and Glypican 3 (GPC-3) in Hepatocellular Carcinoma


Hepatocellular carcinoma (HCC) is the fifth most common cancer and third most common cause of cancer mortality worldwide. The key to achieve long-term survival is early diagnosis of hepatocellular carcinoma when potential therapeutic options are feasible. Although a biopsy is the gold standard for diagnosis of HCC, sometimes it is imprecise due to many limits, such as small sample sizes and sampling locations. In some cases, it is hard to differentiate high-grade dysplastic nodule from very well-differentiated HCC upon morphologic characteristics. Thus, molecular biomarkers that can discriminate HCC from non-malignant lesion are absolutely necessary.

Glypican-3 (GPC-3), a member of the glypican family, was considered as a potential diagnostic marker for HCC because of its preferential expression in HCC. As many previous studies suggested, GPC-3 has a high specificity and relative low sensitivity for discriminating HCC from non-tumor tissues. In the cohort, 54% of HCCs as well as 7.6% of non-tumor tissues displayed positive GPC-3 staining, in which 15% of positive HCCs and all positive non-tumor tissues showed focal staining. Focal staining GPC-3 may have a considerable impact for HCC diagnostic accuracy with biopsy specimens because of a high false positive or negative rate that should be expected due to sampling issues.

Astrocyte elevated gene-1 (AEG-1), an oncogene, has been identified as an important player in cancer development and progression. Expression of AEG-1 in HCC was higher than in non-tumor tissues and dysplastic nodules. Notably, all positive AEG-1 in HCCs showed diffuse staining pattern. Diffuse staining was rarely seen in non-tumor tissues and dysplastic nodules. Diffuse staining may help diagnosis of HCC, especially for small sample sizes (biopsy), but may also increase false positive rate in non-tumor tissues.

When using AEG-1 as a single biomarker to distinguish HCC from non-tumor tissues, a high sensitivity of AEG-1 (91.9%) was seen. However, the specificity and accuracy were relatively low (83.7% and 87%, respectively), suggesting that AEG-1 alone has limitations to be a biomarker for diagnosis of HCC. Subsequently, we tested the diagnostic value of combination of AEG-1 and GPC-3. When positive was defined as either AEG-1 or GPC-3 diffuse positivity, the sensitivity, specificity and accuracy of the combined markers was 94.6%, 89.5%, and 90.5%, respectively. These suggested that the combination of AEG-1 and GPC-3 would have a better sensitivity, specificity and accuracy in HCC diagnosis than that if either of them was used alone.

Considering diffuse staining as positive would reduce false positive in diagnosis of HCC, the combination of AEG-1 and GPC-3 would be useful to improve early diagnosis of HCC in cases without ideal sample size, like biopsy specimens.
The People Behind the Paper: Ralf Duerr, MD, PhD & Andrew N. Banin

Near full genome characterization of HIV-1 unique recombinant forms in Cameroon reveals dominant CRF02_AG and F2 recombination patterns


Lay summary of the research study
 RD&AB: The enormous diversity of HIV is one of the main reasons why there is still no cure or effective vaccine against HIV. In HIV hotspot regions such as West-Central Africa where many HIV subtypes circulate, viruses frequently recombine and create mosaic viruses composed of different subtypes. Recombination enhances viral evolution and complicates HIV diagnosis, prevention, and treatment. In the current study, we employed our newly developed HIV near-full genome sequencing method to characterize emerging recombinant forms. In collaboration with the NYU sequencing core, we performed deep sequencing to illuminate viral evolution and recombination taking place within single individuals.

Current position?
RD: Assistant Professor in the Department of Pathology at NYU School of Medicine.
AB: Prospective PhD candidate in Medical Virology at the Faculty of Medicine and Biomedical Sciences in the University of Yaoundé I and is currently working as Research Assistant at the Albany Medical College, Department of Immunology and Microbial Disease (http://www.amc.edu/Research/IMD/).

Can you give us your scientific biography and the questions your lab is trying to answer?
RD: After the completion of my M.D. and Ph.D., I moved into HIV research for my first postdoc period in Germany. In 2013, I joined Phillipe Nyambi’s lab at NYU to continue working on HIV, where I became Assistant Professor in 2015 and an independent PI in 2016. My group is trying to shed light into HIV diversity and emerging strains in HIV hotspot regions such as Cameroon and Nigeria, antiretroviral drug resistance, protective immune responses in natural HIV infection, and the elaboration of novel vaccine concepts.

What is the novelty of your study?
RD&AB: The study illuminated the extent and plasticity of HIV strain diversity over the near full HIV genome through the example of emerging recombinant forms in Cameroon, the supposed epicenter of the HIV disease. Deep sequencing unveiled the viral diversity evolving in single individuals and the genetic process of recombination, the prerequisite for the continued diversification of HIV.

Can you give us the key results of the paper in a paragraph?
RD&AB: We identified that, along the entire HIV genome, emerging recombinant forms are composed of multiple mosaic pieces that can originate from a broad variety of subtypes. Despite the great variation in the mosaic composition of the recombinant forms, we found a common background pattern of the recombinants in Cameroon based on two of the regionally most prevalent subtypes. In addition, we identified high intra-patient diversity of HIV including one individual in whom the recombination event between two genetically different viral strains could be recapitulated.

Where will this work take your research?
RD: The findings of the study underlined the challenges viral recombination brings along; however, the identification of common recombination patterns and the understanding of the genetic landscape of circulating HIV viruses in a given population are the basis for the development of targeted therapies and vaccines. The long-term goal of this study is to identify conserved immunogenic sequence stretches of the viral genome, against which a regional vaccine can be directed.

How did you come to join the Duerr lab, and what drives your research?
AB: I was introduced to the Duerr lab by Phillipe Nyambi in October 2015. I first met Dr. Nyambi at the Medical Diagnostic Center in Yaoundé, Cameroon more than 5 years ago when I was in search for a laboratory to foster my HIV studies towards my PhD degree. I am particularly interested in HIV translational research in order to impact the lives of those living with AIDS.

Finally, let's move outside the lab – what do you like to do in your spare time in NYC?
RD: In my spare hours, I like spending time with friends, doing different kinds of sports, and exploring the streets of NYC.
AB: In my spare time, I like to travel and discover places, and that is how I discovered Albany where I currently reside.
Academic Achievements

Grants

Eva Hernando-Monge, PhD
SPORE
Melanoma SPORE Project

Maria Aguero-Rosenfeld, MD
NYS Department of Health
AR Surveillance Pilot
(A Technology and Genomic Microbiology Platform for State-Wide Surveillance and Control of Antimicrobial Resistance)

Michelle Krogsgaard, PhD
SPORE
Melanoma SPORE

Matija Snuderl, MD
Children's Hospital/Boston
Genomics of MPNST (GeM) Consortium (Agreement)

George Jour, MD
SPORE
Melanoma SPORE Project

Boris Reizis, PhD
NIH R21
Novel genetic tools for the analysis of plasmacytoid dendritic cell function in vivo

Stefan Feske, MD
NIH R01
Ca2+ signaling via SOCE in the pathogenesis

Research Fellowship

Palaniraja Thandapani, PhD
Aifantis Lab
Alex Lemonade Stand Foundation
Targeting Valine-Specific Amino Acid Dependency in T Cell Acute Lymphoblastic Leukemia

Jane A. Skok, PhD
NIH P01
The impact of changes in chromatin architecture on cancer phenotypes and tumor progression

Kathryn Hockemeyer, BA
Aifantis Lab
NIH F30
Altered Dependencies of Melanoma on Rewired Post-Transcriptional Regulation

Sergei Koralov, PhD
NIH R03
Updating the toolbox: applying CRISPR towards the study of the xenobiotic transporter MDR1
Spotlights

2019 Pathology Retreat

“This year Pathology retreat was particularly dynamic and filled with outstanding talks” stated Axel Concepcion Gonzalez, PhD, postdoctoral fellow in the Feske lab, poster winner for the basic research category together with Vladislav Sviderskiy, MD/PhD student in the Possemato lab. “The retreat was a great occasion to catch up with colleagues and see all the amazing work happening at our medical center!” said Vladislav. “It was a great overall scientific compilation on cutting-edge novel research and experiments under one roof” said Nainita Bhowmick, postdoc in Park lab, and poster winner for translational research. These are some of the trainee comments after attending this year 6th Annual Pathology Retreat on Friday, June 14th. The event was organized by Dr. Feske and Dr. Delair with the help of a great administrative team (Stefanie Castanza, Danielle Rouchone, Remy Moon, Ben Zapp and Caterina Berti).

The retreat featured six Pathology Trainees speakers (PhD Students, Postdoc, Residents and Fellows) and four poster winners. Trainee speakers were selected by the pathology retreat committee among several applicants who participated in our first trainee speaker contest. The goal was to showcase the outstanding quality and diversity of trainees and give them a unique opportunity to share their research with colleagues and a broad Pathology audience. Trainees gave a 15 min talk on their own research findings in any area of basic, translational, or clinical research. The retreat also featured 4 poster winners among 33 poster presentations. The 4 awards for the best posters were given in three different categories: two for Basic, one for Clinical and one for Translational research. The event was a huge success with a great participation from the entire department.

Trainee Speakers!

Rana Moubarak, PhD, Instructor, Hernando Lab
The histone demethylase PHF8 epigenetically regulates TGFβ signaling to promote melanoma metastasis

Sascha Kahlfuss, MD, Postdoctoral Fellow, Feske Lab
Immunodeficiency due to mutations in ORAI1 and STIM1

Aswin Natarajan Ph.D, Krogsgaard Lab
Molecular determinants involved in TCR proximal signaling

Doug Allison, MD, PGY-2 Resident
Early Onset Colorectal Adenocarcinomas are More Likely to Have Poor Prognostic Features: In Support of the New ACS Colorectal Cancer Screening Guidelines

Andrea Hernandez, DO, Women’s Pathology Fellow
Programmed Death-Ligand 1 (PD-L1) Immunohistochemistry on Cytology Cell Blocks in Non-Small Cell Lung Carcinoma

Matthew Witkowski, PhD, Postdoctoral Fellow, Aifantis Lab
The relapsed B-cell acute lymphoblastic leukemia immune microenvironment

Poster Winners!

Axel Concepcion Gonzalez, PhD
Feske Lab
Functional genomics screens to define the ion channelome in T cells and adaptive immunity

Vladislav Sviderskiy
Possemato Lab
Iron-Sulfur Cluster Biosynthesis Supports POLE Function and Genomic Stability in Basal-Like Breast Cancer

Nainita Bhowmick, PhD
Park Lab
Role of CD97 in Acute Myeloid Leukemia

Vamsi Parini, MD, MPH
Pathology Resident (PGY-4)
Integrated Expression (Chromogenic in situ Hybridization) of Long Noncoding RNAs (LncRNAs) Segregate Indolent from Clinically Significant Prostate Cancer
2019 Immunology and Inflammation Retreat

The 2019 iteration of the annual Immunology and Inflammation (I&I) retreat took place on June 19th in the Alumni Hall B at the Medical Center. Organized by Dr. Reizis, Dr. Schwab and Dr. Krogsgaard this event featured an outstanding group of local and external speakers. In particular, the program highlighted research by junior faculty members from NYU and other institutions in New York City, giving trainees an opportunity to interact with them and learn more about this challenging yet exciting career stage. The program had a special session dedicated to tumor immunology, featuring a keynote presentation by Brian Brown, PhD (Icahn School of Medicine at Mount Sinai) and a really interesting poster section.

A special thanks to Jennifer Molde and Adrienne Dolginko who did a great job helping organizing the event. For more info about the program please click here.

Poster Winners!

Audrey Baeyens
Schwab Lab
Regulation of S1P gradients during an immune response

Shushan Sargsian
Cadwell Lab
The immunomodulatory capacity of Clostridia species isolated from the helminth-influenced microbiota

Marcus Hines, PhD
Koralov Lab
The Role of miR-29 in B Cell Development and Function

Dr. Syed Hoda named as one of the Top 100 of The Pathologist’s 2019 Power List

https://thepathologist.com/power-list/2019

The “Trailblazers of the Lab” Top 100 list of The Pathologist features 100 of the industry’s top trailblazers. Dr. Syed Hoda, our Director of Bone and Soft Tissue Pathology made this year’s “Trailblazers of the Lab” Top 100 list of The Pathologist.

“Syed has been phenomenal all these years as a diagnostic pathologist, researcher, technology pioneer and educator!”- said Dr. Aifantis, chair of the Pathology Department at NYU. “We are proud to have him with us!”

Syed is Director of Bone and Soft Tissue Pathology at New York University (NYU) and Director of Surgical Pathology at the NYU Langone Orthopedic Hospital. His trailblazing approach to new technologies, such as the use of educational apps and the development of remote frozen section systems, sees him appear on this year’s Power List. “I would like my pathologist colleagues to be bold, thoughtful, and creative in helping patients and physicians deal with human disease – and these are the same qualities we should use in teaching the next generation of doctors to inspire them for the future,” says Syed.

“Above and Beyond Mentorship Award” to Dr. Richard Possemato

Richard L. Possemato, PhD, Assistant Professor, Department of Pathology, won the student-led award recently created by the Sackler Institute for Graduate Biomedical Science. This award recognizes mentorship qualities such as promoting scientific excellence, valuing professional advancement, being open-minded and inclusive to gender and racial minorities, being thoughtful in criticism, and promoting work/life balance. Many PIs were highlighted as excellent scientists, caring people, and devoted leaders, but Dr. Possemato stood out by the number and strength of his nominations,” said Lili Blumenberg, a PhD student and member of SASEM (Students Advocating for Science, Education, and Medicine).

Read More

Richard Possemato, PhD
First P50 SPORE Grant for NYU Langone Health. Pathology Faculty among award investigators.

Eva Hernando-Monge, PhD, Michelle Krogsgaard, PhD and George Jour, MD

Co-principal Investigators: Iman Osman, MD, and Jeffrey Weber, MD, PhD. Additional Awards Investigators: Jiyoung Ahn, PhD, Tomas Kirchhoff, PhD, Michelle Krogsgaard, PhD, Eva Hernando-Monge, PhD, David Polsky, MD, PhD, Yongzhao Shao, PhD, Judy Zhong, PhD, Judith Goldberg, ScD, Itai Yanai, PhD, and George Jour, MD.

Congratulation to Pathology Faculty Eva Hernando-Monge, PhD, Michelle Krogsgaard, PhD, and George Jour, MD for being part of the NYU multidisciplinary team that received the National Cancer Institute (NCI) P50 Specialized Programs of Research Excellence (SPORE) grant. The program will be led by Perlmutter Cancer Center co-principal investigators Iman Osman, MD and Jeffrey Weber, MD, PhD and will design tools (biomarkers) to help predicting whether Immunotherapy treatments in Melanoma will be effective for a given patient. Immunotherapies have been given great results in cancer treatment but there is a strong need of easy tools to predict both a patient’s response to a treatment and their risk of immune-related side effects before the treatment occurs. Easy test such as the use of biomarkers could help physician to analyze those parameters related to each patient and tailor the treatment.

Read More
New & Notable

MOTI, I&I and Pathobiology Graduate Training Programs
Congratulations incoming students and graduated PhDs!!!

Start... 2nd Year Graduate Students

Connor Foster (MOTI)
Neel Lab

Juan Andres Kochen Rossi (MOTI)
Miller Lab

Tony Tao (I&I)
Feske Lab

Mericien Venzon (I&I)
Cadwell Lab

And Finish Line... Graduated students 2019

Kaitlyn Scacalossi, PhD (I&I)
Moore Lab

Juan Rivera-Correa, PhD (I&I)
Rodriguez Lab

Lea Lough, PhD (MOTI)
Cardozo Lab

Jason Wong, PhD (MOTI)
Shok Lab

Manín Sandoval, PhD (I&I)
Durbin Lab

Marcus Hines, PhD (I&I)
Koralov lab

Lena Lau, PhD (PATHOBIO)
Gregory David, PhD Advisor

Krystal Sotolongo, PhD (PATHOBIO)
Ghiso lab

The department of Pathology serves as the intellectual and administrative home for two Graduate Training programs of the NYU School of Medicine’s Sackler Institute: MOTI, Molecular Oncology and Tumor Immunology, and I&I, Immunology and Inflammation. Both programs have an incredible research curriculum that consists of core courses specific for each program (see program). Laboratory research opportunity are also really vast and provides trainees a solid foundation for their career path. MOTI and I&I programs provides a supportive, interactive environment. The program’s administrators, your research advisor, and your faculty advisory committee guide you and supervise your work. After completing three laboratory rotations during your first year, you will focus on research in your chosen thesis lab. As part of the training program, trainees present their current research on a rotating basis at the Work In Progress seminar series (WIP) (see below for schedules). Throughout your training, you will also participate in events such as Journal clubs, other seminar series and retreats.

Please check the next page for more info about each program.
**MOTI**
The Graduate Training Program in Molecular Oncology and Tumor Immunology is an integrated program focusing on Cancer Biology, Tumor Immunology, and the interface between these disciplines. A full list of courses and more info about the program please check the MOTI Brochure [here](#).

**MOTI WIP:**
The series take place each Tuesdays from 5:00-6:00PM in MSB 588.
[View schedule](#)

**When, how to apply**
Click [here](#).

**Graduate Students in 2019**
Lea Lough PhD – Cardozo lab
Jason Wong PhD – Skok lab

**New Student (2nd year)**
Connor Foster – Neel Lab
Juan Andres Kochen Rossi – Miller Lab

**Leadership**
David E. Levy, PhD Director
William L. Carroll, MD Co-Director
Tony Huang, PhD Graduate Advisor

**Coordinator**
Jennifer Molde

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**I&I**
The Graduate Training Program in Immunology & Inflammation consists of core courses in research methodology, a two-term course in immunology (Introduction to Immunology and Advanced Immunology), and electives in subjects ranging from molecular oncology to bioinformatics. For curriculum, Mentoring Faculty and Events of the program please [here](#).

**I&I WIP:**
The series take place each Wednesday from 3:00-4:00PM in the New Science Building.
[View schedule](#)

**When, how to apply**
Click [here](#).

**Graduate Students in 2019**
Kaitlyn Scacalossi – Moore lab
Marvin Sandovali – Durbin Lab
Juan Rivera-Correa – Rodriguez lab

**New Student (2nd year)**
Mericien Venzon – Cadwell Lab
Tony Tao – Feske Lab

**Leadership**
Boris Reizis, PhD Director
Susan Schwab, PhD Graduate Advisor
Michelle Krogsgaard, PhD Graduate Advisor

**Coordinator**
Jennifer Molde
Who is New

**Rebecca Austin**  
Aifantis Lab  
Postdoctoral Fellow

**Michael DeLorenzo**  
Snuderl Lab  
Assistant Research Technician

**Abdul Hannan Mir**  
Possemato Lab  
Research Technician

**Apolonia Orzechowska**  
Feske Lab  
Student Intern

**Ali Ranjbaran**  
Research Data Associate  
Skok Lab

**Ikjot Sidhu**  
Feske and Naik Lab  
Bioinformatics Analyst

**Samik Upadhaya**  
Reizis Lab  
Postdoctoral Fellow

**Julia Buldo-Licciardi**  
Tsirigos Lab  
Volunteer

**Shih Ming Huang**  
Papagiannakopoulos Lab  
Assistant Research Technician

**Patricia Blanco Munoz**  
Feske Lab  
Volunteer

**Thomas Paloschi**  
Park Lab  
Volunteer

**Pedro Saavedra**  
Feske Lab  
Postdoctoral Fellow

**Christina Tavlarakis**  
Tsirigos Lab  
Volunteer

**Veronica Uribe-Echevarria Zubizarreta**  
Postdoctoral Fellow  
Skok Lab

**Erica Chio**  
Skok Lab  
Student Intern

**Hidenori Kasahara**  
Postdoctoral Fellow  
Park Lab

**Lucile Noyer**  
Feske Lab  
Postdoctoral Fellow

**Margish Ramani**  
William Lab  
Associate Research Technician

**Neil Sarkar**  
Snuderl Lab  
Volunteer

**Andrey Tikhonov**  
Naik Lab  
Volunteer

**Yueyang Wang**  
Reizis Lab  
Research Technician
Alumni News

Raffaella Di Micco, PhD
Group leader at the San Raffaele-Telethon Institute for Gene Therapy (SR-TIGET)
Email: dimicco.raffaella@hsr.it
Website

1. Position at NYU/supervisor/when position started–ended?
RD: In 2010, I moved to United States for a postdoctoral training in the laboratory of Dr. Eva Hernando-Monge at NYU School of Medicine to perform research aimed at understanding the epigenetic and transcriptional regulation in stem cell and during cancer development. I left the Hernando’s lab in June 2015.

2. Present position/when did you start?
RD: I established my own research team at the San Raffaele Telethon Institute for Gene Therapy in Milan in September 2015 where I am currently a group leader.

3. How did you get where you are today and how did the experience in the pathology department and Hernando lab help you get there?
RD: During my postdoctoral training in the Hernando’s lab I was awarded with prestigious fellowships including European Molecular Biology Organization (EMBO) fellowship, Human Frontier Science Project (HFSP) and the New York Stem Cell Foundation (NYSCF) Druckenmiller postdoctoral Fellowship. Altogether these fellowships gave me the opportunity to gain visibility and to establish collaborations and interactions with outstanding scientists in the field of stem cell biology. Soon after I joined the lab, I became part of a study focused on the role of miRNA regulation in melanoma metastasis that deserved me a co-authorship in a manuscript published in Cancer Cell. Later, by using genetic and chemical-based approaches, both targeted and genome-wide, I identified novel molecular mechanisms involved in stem cell maintenance, with a particular focus on the epigenetic and transcriptional regulator BRD4 (Di Micco et al., 2014). Together with the scientific excellence in the Hernando’s lab I had the chance to work with a vibrant group of scientists that were not only colleagues but also true friends. Overall the postdoctoral training in Hernando’s lab made me a stronger and motivated scientist and contributed to prepare myself for a career as an independent investigator. Eva is an exceptional, supportive mentor and a role model that gave me the freedom to develop new research ideas and precious advices during job applications process. Seeking for a group leader position, I took part to selective and competitive job interview processes in leading institutions in Europe and United States. I decided to establish my research team at the San Raffaele-Telethon Institute for Gene Therapy (SR-TIGET) within the San Raffaele Hospital, in Milan in early 2016. The research in my lab capitalizes on the scientific expertise of my PhD and postdoctoral trainings in DNA damage, senescence, epigenetics and cancer and involves, as a model system, the human hematopoietic stem and progenitor cells (HSPCs). The main goal of my lab is to dissect the interplay between chromatin and DNA damage upon stress in normal stem cells and in the context of malignant hematopoiesis with the final aim to develop hypothesis-driven strategies for therapeutic applications. Only after my experience in Eva’s lab I could value the importance of a research career that is pioneering and translational. I learned the importance of integrating my research projects within a multidisciplinary team of basic biologists, statisticians, clinicians with different yet complementary sets of expertise taking advantage of relevant human patient samples.

4. What was the most difficult moment in your scientific career and how were you able to bypass it and succeed?
RD: During my postdoctoral training my research had a significant drawback due to the Superstorm Sandy that affected NYC and NYUMC in October 2012. Despite the consequences of this natural disaster in the middle of my postdoctoral work, I was able to successfully complete my training and to contribute to a comprehensive study in the Hernando’s lab on the mechanisms of BRD4-dependent regulation of enhancer elements in melanoma survival (Fontanals-Cirera Mol Cell 2017) that lead to the identification of new therapeutic targets for cancer treatment. As an independent young investigator, the most difficult part of my job has been the establishment of a team with brand new research projects and the difficulties to recruit exceptional students and postdoctoral fellows in Italy.

5. What advice would you give a postdoc to find their way?
RD: Be passionate about what you do and try always to establish a good work-life balance and manage the time to secure moments with family and friends. In the long term, this attitude will lead to an healthy and successful career.

6. How do you compare the NYU experience with other Institutions you have been in?
RD: NYU is a great place to do excellent research. The different departments allow a unique exchange on expertise and scientific know-how that are key to push innovative and collaborative science.

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Website

1. Position at NYU/supervisor/when position started–ended?
DC: I joined NYU Medical Center as pathology fellow in 1997 and served there until 1999.

2. Present position/ when did you start?
DC: Currently I am a Professor of Pathology and Director of Anatomic Pathology and Pathology Informatics at the University of Washington since April 2017.

3. How did you get where you are today and how did the experience in the pathology department help you get there?
DC: When I left NYU, I went to University of Alabama at Birmingham as junior faculty where I stayed for nine years and became full professor. After I joined Yale university as Director of Cytology for seven years and then I moved to Mount Sinai for two years before becoming Director of Anatomic Pathology at University of Washington, where I currently am.

NYU offered me a lot of research opportunities and I received really good mentorship from different faculty members as Dr. Joan Cangiarella, Dr. Jerry Weisman, Dr. W. Fraser Symmans and Dr. Jean-Marc Cohen. My attending at NYU helped me to stay in this country by supporting me to obtain a work VISA first of all. In addition to that I also received a great research training in NYU. I was given many research opportunities publishing many papers in those few years in collaboration with my mentors. A particular thank you for all work done in that training period goes to Paul Elgert, Manager of the Cytology laboratory, who assisted me to identify and organize cases. I also want to mention Dr. Herman Yee. He was of instrumental support for all my research projects. All these people were my mentors and collaborators who helped me start the foundation of my career.

4. What was the most difficult moment in your scientific career and how were you able to bypass it and succeed?
DC: I was a Fellow at Memorial Sloan Kettering Cancer Center and applied for the Cytology fellowship for the year after but I was not chosen and I did not really know what to do. In the Spring of the same year I applied to a newly accredited NYU cytology fellowship program and I was fortunate enough to be offered the position. However, in the period between MSK denial and NYU offer I did not have a plan and I was really disappointed and frustrated. I may have had to leave the country. I am really glad I was accepted at NYU and I was given the opportunity to continue my training and start my academic career.

5. What advice would you give a trainee to find their way?
DC: I think you need to make sure to pick what interests you the most since you have to do it for the rest of your life! You also need to be sure to have a healthy work/life balance. Choose a pathway good for your career but do not just focus on work and make sure that you have a balanced life.

6. How do you compare the NYU experience with other Institutions you have been in?
DC: In my experience at NYU, I was offered good mentorship opportunities and then my mentors supported me through all my career. They also become good friend. I still keep in touch with many people I worked with and helped me out and in many cases I build up very long friendships.
Upcoming Events

**Immunology and Inflammation WIP Schedule**

- 10/2/2019
  Tae Jin Yun, Reizis Lab
- 10/16/2019
  Sascha Kahlfuss, Feske Lab
- 10/23/2019
  Axel Concepcion, Feske Lab
- 11/6/2019
  Jhimmy Talbot, Littman Lab

**Molecular Oncology and Tumor Immunology WIP Schedule**

- 10/1/2019
  Ana Maria Sastre Perona, Schober Lab
- 10/8/2019
  Daniel McLaughlin, Possemato Lab
- 10/15/2019
  Stephanie Patchett, Huang Lab
- 10/22/2019
  Daniele Simoneschi, Pagano Lab

**Translational Research Program WIP Schedule**

- 10/18/19
  Cynthia Loomis, Chris Park
- 11/15/19
  Aristotelis Tsrigos, Andre Moreira
- 12/20/19
  Chris Park-Etan Marks (left), Cynthia Liu, Matija Snuderl
- 1/17/20
  Sunjida Ahmed, Neil Theise, (LI Xiaodong but he left)

**Lawrence Gardner Memorial Symposium**

- 11/01/2019
  1:30-5:30pm
  Schwartz E room

**Department of Pathology Holiday Party**

- 12/13/2019
Suggested by You

**Bookshelves**

Recognizing the contribution of Nature Research journal referees
16 Apr 2019 | 16:00 BST | Posted by Rebecca Walton | Category: Nature Research

Three tips for giving a great research talk
By Neil A. Lewis, Jr., June Gruber, Jay J. Van Bavel, Leah H. Somerville

“DNA Microscopy” Offers Entirely New Way to Image Cells

44 Gilliam Fellowships Awarded to Support Diversity and Inclusion in Science

Next Generation Organoids for Biomedical Research and Drug Discovery
Tuesday, November 12, 2019, 9:00 AM - 6:00 PM
The New York Academy of Sciences, 7 World Trade Center, 250 Greenwich St Fl 40, New York
Meet the Team

Caterina Berti, PhD
Manager Research Laboratory Operations
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Jennifer Molde
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Lyllian Mundo
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I don't care if we are out of coffee filters... This is a completely inappropriate use of the spin columns!

med student syndrome

why are my eyes red??

microbiology pathology histology

doctor mode activate!
- Sarcoidosis
- Conjunctivitis
- Staph, strep, pneumonococcus, gonococcus, adenovirus, Eagle's syndrome
- Keratitis fugax hereditaria
- Ollivier syndrome
- Polycythemia
- Queensland tick typhus
- Sandfly fever
- Yellow Fever

yeah... uh... it's just allergies. Take some Claritin and you'll be fine

(real doctor)