Repositioning of antigen receptor loci to pericentromeric heterochromatin (major satellite) contributes to establishing monoallelic expression of these genes.

3D-structure images of nuclei of B-cells to indicate position of antigen receptor genes taken with confocal microscope.
Welcome to the Department of Pathology. The Department sponsors two training programs within the NYU Sackler Institute:

- Pathobiology (PB)
- Molecular Oncology and Immunology (MOI)

**MOI** is an integrated program focusing on **Molecular Oncology and Immunology**, broadly defined, with a major emphasis on the intersection of these disciplines. It is a well-established program, with an extensive and experienced faculty.

We encourage you to review the detailed description of the MOI graduate training program contained in this brochure and to contact the faculty and program advisors if you want to learn more about it.

You may also want to visit the Department of Pathology website at: [http://pathology.med.nyu.edu/](http://pathology.med.nyu.edu/)
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  - Foundations of Cell and Molecular Biology I
  - Introduction to Immunology
  - Foundations of Cell and Molecular Biology II
  - Molecular Oncology
  - Advanced Immunology
  - Molecular Virology
  - Bioinformatics
- Immunology Seminar – 2009-2010 Series
- Pathology Grand Rounds – 2009-2010 Series
- Pathology Seminar – 2009-2010 Series
- Work In Progress – 2009-2010 Series

Training Program in Molecular Oncology and Immunology

Overview
The Molecular Oncology and Immunology (MOI) Program is designed to train doctoral candidates for careers in cancer biology and immunology, with a special emphasis on the interface between these fields, from both molecular and translational viewpoints. The program emphasizes a unique perspective of cancer from an immunological point of view and of immunology from a cancer point of view, while incorporating education, training, and research in both basic and translational aspects of both immunology and oncology.

The curriculum includes training in the foundations of molecular cell biology and genetics, coupled with specialized courses in immunology and molecular oncology. Curriculum and research projects in the program range from basic questions of developmental immunology and cancer biology to applied and translational aspects of the immune response to tumors. Research experiences can be acquired in many areas, including: regulation of gene expression; function of oncogenes and tumor suppressor genes; innate, adaptive, and autoimmune diseases; immunity to infectious diseases and cancer and mechanisms of vaccination; role of interferon, interleukins, cytokines, and growth factors in immunology and cancer biology; responses to infectious diseases, such as AIDS, microbes, viruses, and parasites; cell cycle and gene expression aberrations in cancer cells; and neuroimmunology and neurooncological processes.

The program is administered in the Department of Pathology, taking full advantage of being at the interface of the basic and clinical research efforts of the department, while drawing its faculty from across many departments and institutes in the School of Medicine.

**Director:** David E. Levy, Ph.D.  
David.Levy@nyumc.edu  
212-263-8192

**Advisor:** Susan Smith, Ph.D.  
smithsu@saturn.med.nyu.edu  
212-263-2540

**Coordinator:** Danielle Rouchon  
Danielle.Rouchon@nyumc.org  
212-263-0127
<table>
<thead>
<tr>
<th>Name</th>
<th>Molecular Oncology Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erika Bach, Ph.D.</td>
<td>Mechanisms of stem cell self-renewal, cellular growth, proliferation and pattern formation by the JAK/STAT pathway</td>
</tr>
<tr>
<td>Mary Barcellos–Hoff, Ph.D.</td>
<td>Multicellular processes during progression from normal to neoplastic condition in breast cancer and ionizing radiation</td>
</tr>
<tr>
<td>William Carroll, M.D.</td>
<td>Treatment of childhood cancer, especially leukemias and the common solid tumor neuroblastoma</td>
</tr>
<tr>
<td>Moses Chao, Ph.D.</td>
<td>Molecular Mechanisms of Trophic Factor Action</td>
</tr>
<tr>
<td>Pamela Cowin, Ph.D.</td>
<td>Breast cancer, cell adhesion, and Wnt signaling</td>
</tr>
<tr>
<td>Gregory David, Ph.D., B.S.</td>
<td>Chromatin modifications in development and oncogenesis</td>
</tr>
<tr>
<td>Sandra Demaria, M.D.</td>
<td>Immunotherapy of cancer, adjuvant role of ionizing radiation, breast cancer</td>
</tr>
<tr>
<td>Brian Dynlacht, Ph.D.</td>
<td>Cancer, transcription, cell cycle, centrosome biology, genomics</td>
</tr>
<tr>
<td>Michael Garabedian, Ph.D.</td>
<td>Mechanism of Steroid Hormone Receptor Action in cell growth</td>
</tr>
<tr>
<td>Lawrence Gardner, M.D.</td>
<td>Mechanism and Significance of Hypoxic Regulation of Cell Cycle</td>
</tr>
<tr>
<td>Eva Hernando, Ph.D.</td>
<td>Cell-of-origin' and 'cancer stem cells' in sarcoma and melanoma initiation and progression</td>
</tr>
<tr>
<td>Tony Huang, Ph.D, B.A.</td>
<td>Regulation of ubiquitination and deubiquitination in DNA repair and cancer susceptibility pathway</td>
</tr>
<tr>
<td>Stevan Hubbard, Ph.D.</td>
<td>Crystallographic studies of receptor tyrosine kinases</td>
</tr>
<tr>
<td>Hannah Klein, Ph.D.</td>
<td>DNA damage, genomic instability, homologous recombination</td>
</tr>
<tr>
<td>Peng Lee, M.D., Ph.D.</td>
<td>Androgen receptor and its cofactors in prostate and breast cancer</td>
</tr>
<tr>
<td>David Levy, Ph.D.</td>
<td>Signal transduction, gene expression, innate immunity, growth control</td>
</tr>
<tr>
<td>Susan Logan, Ph.D.</td>
<td>Cell Growth Regulation through the Androgen Receptor</td>
</tr>
<tr>
<td>Daniel Meruelo, Ph.D.</td>
<td>Gene Therapy, Cancer, Alzheimer’s disease</td>
</tr>
<tr>
<td>Moosa Mohammadi, Ph.D.</td>
<td>Structural and functional studies of fibroblast growth factor receptors</td>
</tr>
<tr>
<td>Michele Pagano, M.D.</td>
<td>Ubiquitin system, cell division cycle checkpoints, cancer</td>
</tr>
<tr>
<td>Angel Pellicer, M.D., Ph.D.</td>
<td>Ras, mouse models of cancer, oncogenes, gene therapy</td>
</tr>
<tr>
<td>Mark Philips, M.D.</td>
<td>Processing and membrane targeting of GTPases involved in growth control</td>
</tr>
<tr>
<td>Daniel Rifkin, Ph.D.</td>
<td>Extracellular control of growth factor action</td>
</tr>
<tr>
<td>Robert Schneider, Ph.D.</td>
<td>Altered regulation of gene expression in carcinogensis and cell stress</td>
</tr>
</tbody>
</table>
Susan Smith, Ph.D.  Molecular mechanisms of telomere function  
Daniel Turnbull, Ph.D.  In-Vivo microimaging of mice  
Xue-Ru Wu, M.D.  Molecular pathogenesis of urinary bladder diseases  
David Zagzag, M.D., Ph.D.  Angiogenesis, vasculogenesis, brain tumors, extracellular matrix  
Edward Ziff, Ph.D.  Molecular mechanisms of synaptic regulation
<table>
<thead>
<tr>
<th>Name</th>
<th>Research Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iannis Aifantis, Ph.D.</td>
<td>Hematopoietic stem cell differentiation, leukemia, Ubiquitin ligases</td>
</tr>
<tr>
<td>Nina Bhardwaj, M.D., Ph.D.</td>
<td>Immunobiology of antigen presenting cells; cancer vaccine development</td>
</tr>
<tr>
<td>Bruce Cronstein, M.D.</td>
<td>Physiology and pharmacology of adenosine receptors</td>
</tr>
<tr>
<td>Michael Dustin, Ph.D.</td>
<td>Cell adhesion molecules, immunological synapse, lymphocyte migration</td>
</tr>
<tr>
<td>Adrian Erlebacher, M.D., Ph.D.</td>
<td>Immunobiology of pregnancy, peripheral immune tolerance, immune regulation</td>
</tr>
<tr>
<td>Stefan Feske, M.D.</td>
<td>T cell activation, immunity and development, calcium channels</td>
</tr>
<tr>
<td>Alan Frey, Ph.D.</td>
<td>Function of tumor infiltrating lymphocytes in human breast cancer</td>
</tr>
<tr>
<td>Catarina Hioe, Ph.D.</td>
<td>HIV vaccine, HIV-specific CD4 T cells, and HIV env-mediated pathogenesis</td>
</tr>
<tr>
<td>Michelle Krogsgaard, Ph.D.</td>
<td>T-cell recognition, cancer immunology, self-antigens, receptor signaling</td>
</tr>
<tr>
<td>Suman Laal, Ph.D.</td>
<td>Immunology and molecular biology of Mycobacteria, opportunistic infection in HIV disease</td>
</tr>
<tr>
<td>Juan Lafaille, Ph.D.</td>
<td>Pathogenesis of autoimmune and allergic diseases, regulatory T cells</td>
</tr>
<tr>
<td>David Levy, Ph.D.</td>
<td>Signal transduction, gene expression, innate immunity, growth control</td>
</tr>
<tr>
<td>Dan Littman, M.D., Ph.D.</td>
<td>T cell development; mechanisms of inflammation; AIDS pathogenesis</td>
</tr>
<tr>
<td>David Roth, M.D., Ph.D.</td>
<td>Molecular basis of V(D)J recombination</td>
</tr>
<tr>
<td>Susan Schwab, Ph.D.</td>
<td>Lymphocyte trafficking, inflammation, angiogenesis, sphingosine-1-phosphate</td>
</tr>
<tr>
<td>Skok, Jane, Ph.D.</td>
<td>Nuclear organization of immunoglobulin genes</td>
</tr>
<tr>
<td>Sergio Trombetta, Ph.D, Pharm D.</td>
<td>Dendritic cell function in innate and adaptive immunity</td>
</tr>
<tr>
<td>Susan Zolla-Pazner, Ph.D.</td>
<td>AIDS Vaccines, HIV, Antibodies</td>
</tr>
</tbody>
</table>
# Molecular Oncology and Immunology Program
## Curriculum Outline

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
</table>
| **First Year**     | • Foundations of Cell and Molecular Biology I  
                    • Introduction to Immunology  
                    • Scientific Methods  
                    • Research in Pathology or elective  
                    • Rotation: Research Lab  | • Foundations of Cell and Molecular Biology II  
                    • Molecular Oncology or elective  
                    • Scientific Integrity  
                    • Rotation: Research Lab  | • Rotation: Research Lab |
| **Second Year**    | • Elective  
                    • Grant writing for scientists  
                    • Seminar in Pathology(WIP)  
                    • Research in Pathology  | • Molecular Oncology or elective  
                    • Seminar in Pathology(WIP)  
                    • Research in Pathology  | • Research |
| **Third Year and Beyond** | • Seminar in Pathology(WIP)  
                    • Research in Pathology  | • Seminar in Pathology(WIP)  
                    • Research in Pathology  | • Research |

**Required Courses**
- Foundations of Cell and Molecular Biology I & II
- Introductory Immunology
- Molecular Oncology

**Recommended Electives**
- Advanced Immunology
- Bioinformatics
- Molecular Virology**
- Clinical Cancer Biology*

*Fall, 2011 (Molecular Oncology is a prerequisite)
**Molecular Virology is offered during spring term of odd-numbered years

**Recommended Seminars**
- Immunology Seminars – (Thursdays @12pm)
- Seminar in Pathology Work-in-Progress – (Tuesdays @5pm)
- Cancer Seminars – (Wednesdays @4:30pm)
Course Director: James Borowiec
borowj01@popmail.med.nyu.edu

Lecture and Discussion course
Time: Fall Semester
Course #: G16.2002
Credits: 6

Overview:
This course, offered by the Cell and Molecular Biology Training Program, provides a broad overview of nucleic acid and protein metabolism and function. The fall semester begins with five weeks of Basic Molecular Biology, covering protein and nucleic acid structure, and fundamental aspects of gene expression. This initial section features intensive lectures, and weekly discussion groups. This segment of the course is followed by nine weeks of Selected Topics in Molecular Biology. The latter segment covers prokaryotic and eukaryotic transcription, chromatin structure and gene silencing, telomeres, DNA replication and recombination, protein translation, and RNA splicing and processing. Selected Topics includes two lectures and a discussion section per week. Particularly in the Selected Topics portion of the course, the reading of primary research articles is heavily emphasized. The course has a total of three in-class exams.
Introduction to Immunology

Course Director:  Michael Dustin, Ph.D.
michael.dustin@med.nyu.edu

Lecture and Discussion course
Time:  Fall Semester
Course #:  G16.2306
Credits:  4

Overview:
This comprehensive core course will provide a broad but intensive examination of the immune response, with a special emphasis on the experimental approaches that led to our current understanding of immunological principles. Designed for research-oriented students but open to others, the class will meet 2 times each week. Students will be assigned weekly reading in the form of textbook chapters and a primary research paper. Students and faculty will discuss the textbook information during one session each week, and regular quizzes on this information will provide feedback to all students on their preparation and progress. Critical analysis of the original research articles in a discussion format will be held on Fridays. The research papers will form the starting point for a dialogue between students and faculty that will probe intellectual and practical questions in immunology research, venturing beyond the material presented in the papers into related issues and current research. This is a discussion class and participation in the discussions will be required. Grading will be based on exams and participation. Mid-term and Final Exams will require students to apply general and specific information and approaches learned from the readings and discussion.

**Course Schedule**

<table>
<thead>
<tr>
<th>Class</th>
<th>Discussion/Paper</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Discussion 1</td>
<td>Cells and structures of the immune system.</td>
</tr>
<tr>
<td>Class 2</td>
<td>Paper 1</td>
<td>Paper on recirculation.</td>
</tr>
<tr>
<td>Class 3</td>
<td>Discussion 2</td>
<td>Innate immunity and inflammation</td>
</tr>
<tr>
<td>Class 4</td>
<td>Paper 2</td>
<td>Paper on pattern recognition.</td>
</tr>
<tr>
<td>Class 5</td>
<td>Discussion 3</td>
<td>Antigen recognition by B and T cells</td>
</tr>
<tr>
<td>Class 7</td>
<td>Discussion 4</td>
<td>Generation of antigen receptors</td>
</tr>
<tr>
<td>Class 8</td>
<td>Paper 4</td>
<td>RAG genes.</td>
</tr>
<tr>
<td>Class 9</td>
<td>Discussion 5</td>
<td>Antigen presentation to T cells</td>
</tr>
<tr>
<td>Class 10</td>
<td>Paper 5</td>
<td>Paper on Antigen processing.</td>
</tr>
<tr>
<td>Class 11</td>
<td>Discussion 6</td>
<td>Signaling through immune receptors</td>
</tr>
<tr>
<td>Class 12</td>
<td>Paper 6</td>
<td>Paper on Signaling.</td>
</tr>
<tr>
<td>Class 13</td>
<td>Discussion 7</td>
<td>Development and Survival of Lymphocytes</td>
</tr>
<tr>
<td>Class 14</td>
<td>Paper 7</td>
<td>Thymic selection</td>
</tr>
<tr>
<td>Class 15</td>
<td>Discussion 8</td>
<td>T cell mediated immunity</td>
</tr>
<tr>
<td>Class 16</td>
<td></td>
<td><strong>Mid Term</strong></td>
</tr>
<tr>
<td>Class 17</td>
<td>Discussion 9</td>
<td>The humoral response</td>
</tr>
<tr>
<td>Class 18</td>
<td>Paper 9</td>
<td>Paper on Humoral response.</td>
</tr>
<tr>
<td>Class 18</td>
<td>Discussion 10</td>
<td>Adaptive immunity to infection</td>
</tr>
<tr>
<td>Class 19</td>
<td>Paper 10</td>
<td>Antibodies vs Cellular immunity.</td>
</tr>
<tr>
<td>Class 20</td>
<td>Discussion 11</td>
<td>Failure of host defense mechanisms</td>
</tr>
<tr>
<td>Class 21</td>
<td>Paper 11</td>
<td>Immune evasion by viruses.</td>
</tr>
<tr>
<td>Class 22</td>
<td>Discussion 12</td>
<td>Allergy and Autoimmunity</td>
</tr>
<tr>
<td>Class 23</td>
<td>Paper 12</td>
<td>Th2 mediated immunity</td>
</tr>
<tr>
<td>Class 24</td>
<td>Discussion 13</td>
<td>Tumor Immunology</td>
</tr>
<tr>
<td>Class 25</td>
<td>Paper 13</td>
<td>Immune surveillance.</td>
</tr>
<tr>
<td>Class 26</td>
<td>Discussion 14</td>
<td>Manipulation of the immune response</td>
</tr>
<tr>
<td>Class 27</td>
<td></td>
<td><strong>Final Exam</strong></td>
</tr>
</tbody>
</table>
Course Director: James Borowiec
borowj01@popmail.med.nyu.edu

Lecture and Discussion course
Time: Spring Semester
Course #: G16.2002
Credits: 6

Overview:
Foundations II provides a broad overview of cell biology, signal transduction, and basic genetic mechanisms in three modules.

- The Cell Biology module covers protein transport, endocytosis, molecular motors, cell-cell interaction and cell adhesion.

- The Signal Transduction module will include G-proteins, hormonal signaling, concepts in receptor tyrosine kinase signaling, and the cell cycle.

- The final segment provides an introduction to the genetics of bacterial and phages, yeast, drosophila, mice, and humans.

Genetic approaches to whole genome analysis will also be emphasized. The reading of primary research articles is heavily stressed.

The course has a total of three exams that are a mixture of in-class and take-home exams. Attendance and participation in discussion sessions will account for a portion of the final grade.
Molecular Oncology

Course Directors: Angel Pellicer, M.D., Ph.D.  
Angel.pellicer@nyumc.edu

Lectures, Student Presentations, Discussions  
Time: Spring Semester  
Course #: G16.2318  
Credits: 4

Overview:  
Studies the molecular basis for cancer. Topics include somatic mutations and DNA repair mechanisms, viral systems relevant to cellular transformation and human cancer, the pathogenesis of cancer as a consequence of alterations in oncogenes, growth factor genes and tumor suppressor genes with emphasis on the function of their normal counterparts as well, tumor progression, mechanisms of metastasis, and tumor immunology.

Course Schedule:  
Class 1  Introduction to cancer  
Class 2  DNA damage by chemical and physical carcinogens  
Class 3  Response to DNA damage  
Class 4  DNA polymerases and mismatch repair  
Class 4  DNA excision repair and mutagenesis  
Class 5  Introduction to molecular oncology and methods of detection  
Class 6  Tumor immunology  
Class 7  Journal Club  
Class 8  Retroviruses  
Class 9  Papilloma viruses  
Class 10  Cell cycle  
Class 11  Growth factors  
Class 12  Growth factor receptors and signal transduction  
Class 13  Growth inhibitory factors and their receptors  
Class 14  Journal Club  
Class 15  Genetic instability  
Class 16  Apoptosis  
Class 17  The tumor suppressor gene p53  
Class 18  Rb gene and its function  
Class 19  Ras  
Class 20  Transcriptions factors with oncogenic potential  
Class 21  Journal Club  
Class 22  Tumor angiogenesis  
Class 23  Cellular adhesion and metastasis  
Class 24  Telomeres, telomerase and cancer  
Class 25  Chromosomal translocations and human cancer
Advanced Immunology

Course Director: Juan Lafaille, Ph.D.
juan.lafaille@med.nyu.edu

Seminars, Student Presentations, Discussions
Time: Spring Semester
Course #: G16.2308
Credits: 4

Overview:
The course will run once a week, from 12:00 noon to 4 PM, between Jan and May. Every week at noon we will have a seminar. Before the seminar, all students should read carefully the two-three "papers of the week," which will be sent by e-mail a week in advance. Students will be selected to present the papers to fellow classmates and faculty. The papers will be discussed for their significance (questions addressed and their relevance), techniques utilized, analysis of data and perspectives. Students are expected to know the papers before the discussion starts. All students will take turns and will be called to present aspects of the papers. Unless there is confusion among students, the faculty members will try not to cut the students' discussion, and will let the students come to an agreement. During the discussion, the students will have access to the papers and any other material that they wish (i.e. other papers which contain nice schemes that could be drawn for classmates, textbooks).

Grades will depend upon:

1) class participation (discussion of the weekly papers);

2) a short (4-6 page typed) paper;

3) seminar attendance.
Molecular Virology

Course Director: Ian Mohr, Ph.D.
Mohri01@popmail.med.nyu.edu

Lectures, Discussions
Time: Spring Semester
Course #: G16.2210
Credits: 4

Overview:
This course is an introduction to the molecular biology and pathogenesis of animal viruses. Twenty lectures cover fundamental aspects of the viral lifecycle (viral entry into cells, replication, transformation, control of translation) host response (innate and acquired immune response), and explore the biology of a number of medically important RNA and DNA viruses including some emerging pathogens. Selected readings assigned by the lecturers will be discussed in separate sections. There will be one in-class examination at the conclusion of the course.
Bioinformatics

Course Director: Stuart Brown, Ph.D.
Stuart.brown@nyumc.edu

Lectures, Computer Lab
Time: Spring Semester
Course #: G16.2604
Credits: 4

Overview:
This is a practical course in Bioinformatics which will emphasize how to use the computer as a tool for biomedical research. The course will cover sequence similarity, multiple alignment, protein motifs and secondary structure, phylogenetics, genome browsers, and microarray data analysis. Students will learn basic UNIX commands and will write simple programs in Perl and shell scripting languages. Prerequisites include a thorough understanding of theoretical and practical aspects of molecular biology, and some University level mathematics and statistics, but no prior knowledge of computer programming or computer hardware is necessary.

Textbook:
Understanding Bioinformatics
by Marketa Zvelebil and Jeremy Baum

Beginning Perl for Bioinformatics
by James Tisdall

Also Recommended:
Bioinformatics, A Practical Guide to the Analysis of Genes and Proteins
by A.D. Baxevanis and B.F. Ouellette
(free online for NYU students: http://www3.interscience.wiley.com/cgi-bin/booktoc/104086862)

Bioinformatics: Sequence and Genome Analysis
by David W. Mount

Essentials of Medical Genomics
by Stuart M. Brown

Bioinformatics for Dummies
by Jean-Michel Claverie & Cedric Notredame

Blast
by Ian Korf, Mark Yandell, and Joseph Bedell
September 12, 2009
Antigen cross-presentation to MHC class I -- how do external proteins get in?
**Peter Cresswell, PhD**
Howard Hughes Medical Institute Investigator
Eugene Higgins Professor of Immunobiology, Professor of Dermatology and Cell Biology
Yale University School of Medicine
New Haven, CT

September 24, 2009
Molecular mechanisms of calcium channel activation in T cells
**Richard S. Lewis, PhD**
Professor of Molecular and Cellular Physiology
Stanford University School of Medicine
Stanford, CA

October 22, 2009
Crosstalk between gamma delta T cells and their epithelial neighbors
**Wendy L. Havran, PhD**
Professor, Department of Immunology and Microbial Science
The Scripps Research Institute
La Jolla, CA

October 29, 2009
Negative regulators of graft-versus-host disease
**Bruce R. Blazar, MD**
Regents Professor
AHC Assistant Vice President for Clinical and Translational Science
Director, Clinical and Translational Science Institute
Chief, Pediatric Blood and Marrow Transplantation
University of Minnesota
Minneapolis

November 5, 2009
Regulation of T Helper Subsets: Lessons from Primary Immunodeficiencies
**Pamela L. Schwartzberg, MD, PhD**
Senior Investigator, Genetic Disease Research Branch
National Human Genome Research Institute
National Institutes of Health
Bethesda, MD

November 12, 2009
The functional heterogeneity of non-lymphoid tissue dendritic cells
**Miriam Merad, MD, PhD**
Associate Professor, Department of Gene and Cell Medicine
Associate Member, Immunology Institute and Tisch Cancer Institute
Mount Sinai School of Medicine
New York

December 10, 2009
T lymphocyte differentiation, migration and immune regulation
**Federica Sallusto, PhD**
Cellular Immunology Lab Group Leader
Institute for Research in Biomedicine
Bellinzona, Switzerland

January 21, 2010
Mechanisms that Promote and Suppress Translocations in B Lineage Cells
**Frederick W. Alt, PhD**
Charles A. Janeway Professor of Pediatrics and Professor of Genetics
Scientific Director, Immune Disease Institute
Investigator, Howard Hughes Medical Institute
Children's Hospital and Harvard Medical School
Boston
January 28, 2010
Dynamic imaging of Tregs in tumor-draining lymph nodes
Sebastian Amigorena, PhD
Research Director 1st class, Centre national de la recherche scientifique
Immunity and Cancer Unit
Institut Curie/INSERM
Paris

February 18, 2010
Modulating dendritic cell-T cell interactions to promote pathogen immunity and reduce autoimmunity
Alexis Kalergis, PhD
Associate Professor, Department of Molecular Genetics and Microbiology
Facultad de Ciencias Biologicas
Pontificia Universidad Catolica de Chile
Santiago, Chile

February 25, 2010
Hijacking of the Immune System by Lymphoid Malignancies - EVENT CANCELED
Louis M. Staudt, MD, PhD
Deputy Chief, Metabolism Branch, Center for Cancer Research
NIH - National Cancer Institute
Bethesda, MD

March 4, 2010
Nod proteins in inflammation and infection
Dana Philpott, PhD
Assistant Professor, Department of Immunology
University of Toronto
Toronto, Canada

March 18, 2010
Mechanisms of immuno-regulation at mucosal surfaces
David Artis, PhD
Assistant Professor, Department of Pathobiology
University of Pennsylvania
Philadelphia

March 25, 2010
Genetic control of immune tolerance by Aire
Mark S. Anderson, MD, PhD
Associate Professor, Robert B. Friend and Michelle M. Friend Endowed Chair in Diabetes Research
University of California, San Francisco, Diabetes Center
San Francisco

April 8, 2010
Dynamic imaging of T cell behavior in situ
Ellen Robey, PhD
Professor of Immunology and Pathogenesis
University of California, Berkeley
Berkely, CA

April 29, 2010
Commensal microbes in immunity and autoimmunity
Sasha Chervonsky, MD, PhD
Associate Professor of Pathology
Chair, Committee on Immunology
The University of Chicago
Chicago

May 6, 2010
Evolution of Adaptive Immunity in Vertebrates
Max D. Cooper, MD
Georgia Research Alliance Eminent Scholar
Professor of Pathology and Laboratory Medicine
Emory University School of Medicine
Atlanta

May 13, 2010
A mouse model of Epstein-Barr-Virus (EBV) immune surveillance and EBV-driven lymphomagenesis
Klaus Rajewsky, MD
Senior Investigator, Immune Disease Institute
Fred S. Rosen Professor of Pediatrics and Professor of Pathology
Harvard Medical School
Boston
May 20, 2010
Molecular Insights into the Regulation of T Cell Activation and Tolerance
Fernando Macian, MD, PhD
Associate Professor of Pathology
Albert Einstein College of Medicine of Yeshiva University
New York

May 27, 2010
Regulation of Immune and Inflammatory Responses by NF-kB
Sankar Ghosh, PhD
Silverstein and Hutt Family Professor and Chair
Department of Microbiology and Immunology
Columbia University
New York

June 3, 2010
NK cells in mucosal immunity
Marco Colonna, MD
Professor of Pathology and Immunology and Medicine
Washington University School of Medicine
St. Louis
Pathology Grand Rounds – 2009-2010 series

September 14, 2009
"Investigating the contributions of V(D)J recombination to pathology"
David Roth, M.D., Ph.D.
Irene Diamond Professor of Immunology
Director of Medical Scientist Training Program
Chairman, Department of Pathology
NYU School of Medicine

September 21, 2009
"Effects of Dual HIV Infection on Host immune response and implications for vaccine design"
Phillipe Nyambi, Ph.D.
Associate Professor
Bio Safety Officer and Research Microbiologist
Manhattan Veterans Affairs Medical Center
New York

September 28, 2009
"Papillary Thyroid Carcinoma: contentions and convictions"
Jennifer Hunt, MD, MEd.
Associate Professor, Harvard Medical School,
Associate Chief of Pathology; Director of Quality and Safety
Department of Pathology
Massachusetts General
Boston

October 5, 2009
"Utilization of laser microdissection and 2-D difference in gel electrophoresis in the proteomic evaluation of human malignancies"
Jeffrey R. Lee, MD
Professor, Anatomic Pathology
Department of Pathology, Medical College of Georgia
Augusta

October 19, 2009
"TGFβ Roles in Breast Cancer and Carcinogenesis"
Mary Helen Barcellos-Hoff, Ph.D.
Associate Professor
Department of Radiation Oncology and Cell Biology
NYU Langone Medical Center

October 26, 2009
"Diagnostic and Management Issues for the Pathologist in the Interpretation of Radiologic Guided Core Needle Biopsies of the Breast"
Joan Cangiarella, MD
Associate Professor of Pathology and Vice-Chair of Clinical Operations
NYU Department of Pathology
Chief of Service, Bellevue Hospital
New York

November 2, 2009
New Horizons for the Clinical Cytopathologist: Ultrasound Guided FNA Biopsy
Susan Rollins, MD
Medical Director of the Outpatient Cytopathology Center
Outpatient Cytopathology Center
Johnson City, TN

November 16, 2009
Aspects of Hepatitis C Liver Pathology
Shu-Yuan Xiao, MD
Professor of Pathology
University of Chicago Medical Center
Chicago

November 23, 2009
A Candidate Gene For Resistance To Platinum-Based Chemotherapy
Henry Simpkins, M.D., Ph.D.
Professor and Chairman, Department of Pathology
Staten Island University Hospital Laboratory
Staten Island

November 30, 2009
"Uncommon Renal Tuors: Morphologic and Molecular Characteristics"
Ming Zhou, M.D., Ph.D.
Assistant Professor Anatomic Pathology
Cleveland Clinic
Cleveland
December 7, 2009
The Role of Inflammation and Stem Cells in Gastrointestinal Cancer

**Timothy Cragin Wang, MD**
Dorothy L. and Daniel H. Silberberg Professor of Medicine;
Chief, Division of Digestive and Liver Diseases
Columbia University Medical Center
New York

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December 21, 2009
A Practical Approach to Spleen Pathology

**Attilio Orazi, MD**
Professor of Pathology and Laboratory Medicine
Department of Pathology
Weill Medical College at Cornell University
New York

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January 4, 2010
Mucosal Malignant Melanoma of the Head and Neck

**Beverly Wang, MD**
Associate Professor of Pathology and Otolaryngology
Director, Surgical Pathology Tisch Hospital, Surgical Pathology,
Urologic Pathology/Head and Neck Pathology
NYU Department of Pathology

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January 25, 2010
"HMGA2: A new target for early ovarian cancer"

**Jian-Jun Wei, MD**
Associate Professor of Pathology
Northwestern University
Chicago

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February 1, 2010
Serrated Neoplasia

**Rhonda Yantiss, MD**
Associate Professor of Pathology and Laboratory Medicine
Department of Pathology
Weill Medical College at Cornell University
New York

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February 22, 2010
Hans Joachim Scherer: A Very Unfortunate Pioneer In Glioma Research

**David Zagzag, MD, PhD**
Associate Professor of Pathology and Neurosurgery
NYU Department of Pathology

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March 1, 2010
Molecular Classification of Breast Cancer and Molecular Prognostic Factors

**Stuart J. Schnitt, MD**
Professor of Pathology, Harvard Medical School
Director, Anatomic Pathology
Beth Israel Deaconess Medical Center
Boston

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March 8, 2010
Prostate Biobanking 2.0

**Jonathan Melamed, MD**
Associate Professor of Pathology
NYU Department of Pathology

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March 15, 2010
Broken Hearts

**John T. Fallon, MD, PhD**
Chair, Department of Pathology
New York Medical College
Valhalla, N.Y.

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April 19, 2010
Unusual Variants of Squamous Cell Carcinoma of the Head and Neck

**Douglas Gnepp, MD**
Professor of Pathology, Brown University
Pathologist, Rhode Island Hospital
Providence, R.I.
April 26, 2010
Current State of the Bethesda System for Reporting Thyroid FNA’s; Are We Better Off?

Aylin Simsir, M.D.
Associate Professor of Pathology
Director, Molecular Signatures Laboratory
NYU Department of Pathology

May 3, 2010
Personalized Medicine in Molecular Pathology: Illustrated Examples

Stephen Peiper, MD
Peter A. Herbut Professor and Chair
Department of Pathology, Anatomy and Cell Biology
Thomas Jefferson University
Philadelphia

May 17, 2010
Role and Clinical Significance of Transcription Intermediary Factor-1γ in GI Tract and Pancreatic Cancer

Ruliang Xu, M.D., Ph.D.
Associate Professor of Pathology
Associate Professor of Pathology
Director, Gastrointestinal and Liver Pathology
Director, Molecular Oncology Pathology
NYU Department of Pathology

May 24, 2010
Glomerulocystic Kidney: Pathology and Genetics

Helen Liapis, MD
Professor of Pathology and Immunology
Section Head, Nephropathology
Washington University School of Medicine
St. Louis

June 7, 2010
Pathology Residents and Fellows Presentation 1
Presentations by

Olca Basturk, MD: "Applicability and Prognostic Relevance of Ampullary Carcinoma Histologic Typing as Pancreatobiliary Versus Intestinal"

Lan Gellert, MD, PhD: "Breast Cancer and Androgen Receptor"

Rena Yu, MD: "Thyroid aspiration biopsy: What is the measure of success?"

Robert Shibata, MD: "Expression of Sox10 and CD117 (c-kit) in Mucosal Melanomas"
NYU Department of Pathology

June 14, 2010
Changes to the C21 Curriculum

Amy V. Rapkiewicz, M.D.
Assistant Professor of Pathology
NYU Department of Pathology

June 21, 2010
Pathology Residents and Fellows Presentation 2
Presentations by

Kristen Thomas, MD: "Placental abnormalities in children with bronchopulmonary malformations"

Elen Blochin, MD, PhD: "Diagnostic value of Sox10 immunohistochemical staining for the detection of metastatic melanoma in sentinel lymph nodes"

Franto Francis, MD, PhD: "TIF 1 gamma expression and TGF beta dysregulation in gastric cancer" (tentative title)
NYU Department of Pathology

June 28, 2010
Diagnostic Criteria for Endometrial Adenocarcinoma

Khush Mittal, M.D.
Associate Professor of Pathology
Director of Surgical and Gynecologic Pathology
Director, Fellowship Program in Gynecologic Pathology
Director, In-Situ Hybridization Laboratory
NYU Department of Pathology
Bellevue Hospital
New York
<table>
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<th>Date</th>
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<tr>
<td>September 14, 2010</td>
<td>Investigating the contributions of V(D)J recombination to pathology</td>
<td>David B. Roth, MD, PhD&lt;br&gt;Irene Diamond Professor of Immunology&lt;br&gt;Chair, Department of Pathology</td>
<td>New York University</td>
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<td>November 9, 2010</td>
<td>Host Pathogen Interactions during Mycobacterium tuberculosis Infections</td>
<td>Issar Smith, PhD&lt;br&gt;Professor of Medicine&lt;br&gt;University of Medicine and Dentistry of New Jersey</td>
<td>Newark, NJ</td>
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<td>December 14, 2010</td>
<td>Chaining Ubiquitin to the Spindle</td>
<td>Michael Rape, PhD&lt;br&gt;Assistant Professor of Cell and Developmental Biology&lt;br&gt;Department of Molecular and Cell Biology</td>
<td>University of California, Berkeley&lt;br&gt;Berkeley, CA</td>
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<td>January 11, 2010</td>
<td>Canonical and Non-Canonical Roles of STAT Proteins in Development and Disease</td>
<td>David E. Levy, PhD&lt;br&gt;Dr. Louis A. Schneider Professor of Molecular Pathology&lt;br&gt;Vice Chair for Science and Professor of Microbiology&lt;br&gt;Associate Dean for Collaborative Science&lt;br&gt;NYU Department of Pathology</td>
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<td>February 8, 2010</td>
<td>Pursuing Pluripotency</td>
<td>Ihor R. Lemischka, PhD&lt;br&gt;Professor of Gene and Cell Medicine, Developmental and Regenerative Biology</td>
<td>Mount Sinai School of Medicine&lt;br&gt;New York</td>
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<td>March 29, 2010</td>
<td>Validating the Autotaxin/LPA pathway as a molecular target for chemotherapy</td>
<td>Demetrios Braddock, MD, PhD&lt;br&gt;Associate Professor of Pathology&lt;br&gt;Yale University School of Medicine&lt;br&gt;New Haven, CT</td>
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<td>April 5, 2010</td>
<td>Myths and fact in the analysis of complex molecular data and how they shape research capabilities and funding competitiveness</td>
<td>Constantin Aliferis, MD, PhD&lt;br&gt;Director, Center for Health Informatics and Bioinformatics&lt;br&gt;Associate Professor of Pathology&lt;br&gt;NYU Department of Pathology</td>
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<td>April 12, 2010</td>
<td>Innate sensing of microbiota and HIV in regulation of T cell responses</td>
<td>Dan R. Littman, MD, PhD&lt;br&gt;Helen L. and Martin S. Kimmel Professor of Molecular Immunology and Professor of Pathology and Microbiology&lt;br&gt;NYU Department of Pathology</td>
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October 6, 2009
“Hematopoietic Stem Cell Differentiation Regulated by a Single Ubiquitin Ligase: Substrate Completer”
Linsey Reavie

October 20, 2009
“Direct visualization of innate and adaptive immune effector responses to Listeria monocytogenes infection in vivo”
Janelle Waite

October 3, 2009
“Vaccinia virus protein E3L inhibits RLH-mediated induction of Type I IFN”
Eugene Friedman

November 3, 2009
“Recognition of commensal bacteria inhibits intestinal immune responses to pathogens”
Gretchen Diehl

November 17, 2009
“Nonconsensus heptamer sequences destabilize the RAG postcleavage complex, making ends available to alternative DNA repair pathways”
Suzzette Arnal

November 1, 2009
“The Contribution of the Chromatin Associated Sin3B in senescence and Tumor Suppression”
Teresa DiMauro

November 24, 2009
“INTS3 controls the hSSB1-mediated DNA damage response”
Jeffrey Skaar

December 1, 2009
“Differential activation of mitochondrial apoptotic pathways by vasculotropic amyloid-β variants in cells composing the cerebral vessel walls”
Silvia Fossati

December 15, 2009
Poster Session

January 5, 2010
“Regulation of a novel androgen receptor target gene, cyclin B1, through androgen-dependent E 2F family member switching”
Yirong Li

December 8, 2009
“Role of oxidative stress response in pancreatitis and pancreatic cancer”
Rengin Soydaner

January 22, 2009
“Peripheral Generated Tregs: Origin and function”
Jonathan Weiss
January 19, 2010
"Epigenetic regulation of T-cell receptor gene recombination during development of T lymphocytes"
Julie Chaumeil

January 26, 2010
“Follicular Dendritic Cells act as Antigen Capacitors to Prolong the CD8 T Cell Response”
Megan McCloskey

February 2, 2010
“The use of Immune Complexes to enhance antibody responses against HIV-1 envelope gp120”
Rajnish Kumar

February 9, 2010
“MAGE-A3 Dependent Mechanisms Involved in Survival in Multiple Myeloma”
Tricia Nardiello

February 2, 2010
“Critical role for RAG2 in suppressing V(D)J recombination-driven thymic lymphoma”
Ludovic Deriano

February 16, 2010
“Follicular Dendritic Cells act as Antigen Capacitors to Prolong the CD8 T Cell Response”
Megan McCloskey

February 23, 2010
Poster Session

March 2, 2010
“Direct regulation of hematopoietic stem cell commitment by g-secretase complex activity”
Camille Lobry

March 9, 2010
“Structural determination and characterization of human laminin receptor precursor”
Kelly Jamieson

March 16, 2010
“LTBP-1L in Mammary Gland Development and Tumorigenesis”
Alicia Pinderhughes

March 23, 2010
“Characterization of the Cellular Response to Sindbis Infection”
Lisa Venticinque

March 30, 2010
“A microRNA Signature of Locally Advanced Breast Cancer”
Malavika Gupta

April 6, 2010
“Role of CXCR4 and CXCR7/RDC1 in glioma invasion”
Mine Esencay

April 13, 2010
“Beta-TRCP mediated degradation of Deptor contributes to the activation of mTOR signalling”
Alfredo Toschi

April 20, 2010
“The Generation of High Affinity IgE Antibodies”
Huizhong Xiong

April 27, 2010
“Sphingosine 1-phosphate distribution and immune responses”
Willy Ramos-Perez

May 4, 2010
“Mitochondrial STAT3 is critical for Ras-induced tumorigenesis”
Daniel Gough
May 11, 2010

Poster Session

May 18, 2010

“Virtual Screening for Small Molecule Inhibitors of Laminin Receptor”
Vincent DiGiacomo

May 25, 2010

“miRNAs that promote melanoma metastasis”
Avital Gaziel

June 1, 2010

“Translational control of TGFbeta signalling in breast cancer progression”
Lindsey DeCarlo

June 8, 2010

“Mechanistic Insights into RAG- & ZFN-Mediated Recombination”
Cory Lindsay