The department offers a Ph.D. in Pathology, with an emphasis on the molecular and cellular mechanisms of cancer and metabolic diseases. The goal of the program is to train students to be creative and successful scientists with a solid understanding of clinically relevant disease processes.

Ph.D. students in the program enroll in the School of Medicine’s Interdisciplinary Biomedical Sciences (IBS) curriculum during their first year. Together with all the first year Ph.D. students at the medical school, pathology students take IBS 7015 – Interdisciplinary Molecular and Cellular Biology (7 credits) during the first semester.

Students also choose elective courses from within the IBS ‘systems’ curriculum. These courses are tailored to specific biological systems. Topics include the neurosciences, immunology, functional genomics, and cancer biology, among others. The choice of elective courses is made in together with the graduate officer and depends on the student’s specific research interests.

### Assistantships and Research, Pathology

All students admitted to the Pathology Graduate Program are awarded IBS graduate research assistantships.

AL-KHAFAJI, BASIM: M.B.Ch.B., Baghdad University School of Medicine; Clinical Associate Professor

ALASSI, OSAMA: M.B.B.S., University of Jordan; Clinical Assistant Professor

ALI-FEHMI, ROUBA: M.D., Damascus University; Associate Professor (Clinician-Educator)

ANDERSON, BARBARA J.: M.D., Wayne State University; Associate Professor

ARMAR, HENRY: M.B.Ch.B., MPhil, University of Ghana Medical School; Assistant Professor (Clinician-Educator)

ARMIN, ALI-RENZA: M.D., Tehran Medical School; Clinical Associate Professor

ARTISS, JOSEPH D.: Ph.D., University of Windsor; Associate Professor

ASSARIAN, GARY S.: D.O., College of Osteopathic Medicine and Surgery; Clinical Associate Professor

AULICINO, MICHAEL: M.D., University of Michigan; Clinical Assistant Professor

BERNARDO, MARIA: Ph.D., Wayne State University; Assistant Professor (Research)

BERNSTEIN, JAY: M.D., State University of New York, Downstate Medical Center; Clinical Professor

BONNETT, MICHELLE: M.D., M.S., B.S., Wayne State University; Clinical Assistant Professor

BOSCH, BARBARA: M.D., University of Iowa; B.S., Central College; Associate Professor (Clinician-Educator)

CHEN, RUEY: M.D., National Taiwan University School of Medicine; Clinical Assistant Professor

CHITALE, DHANANJAY: M.B.B.S., Seth G.S., Medical College and King Edward Memorial Hospital; Clinical Assistant Professor

CRISMAN, JOHN: M.D., Case Western Reserve University; Professor

EISENBREY, A. BRADLEY: M.D., Wayne State University; Clinical Assistant Professor

EL-FAKARANY, MOHAMED: M.D., Tanta University School of Medicine; Clinical Assistant Professor

FAGAOGA, OMAR: Ph.D., Loma Linda University; Clinical Associate Professor

FERNANDEZ-VALDIVIA, RODRIGO: Ph.D., Universidad Autonoma de Madrid; B.S., Universidad de San Agustin de Arequipa; Assistant Professor

FRAUCHIGER, WENDY: M.D., Northwestern University; B.A., Occidental College; Clinical Assistant Professor

FRIDMAN, RAFAEL: Ph.D., Hebrew University Medical School; Professor

GABA, ARTHUR: M.D., Wayne State University; Clinical Assistant Professor

GIACOMELLI, FILIBERTO: M.D., University of Pisa; Professor Emeritus

HABIB, LUZETTE: M.D., B.S., University of Michigan; Clinical Assistant Professor

HERSCHMAN, BARRY R.: M.D., Wayne State University; Clinical Associate Professor

HLAVATY, LEIGH: M.D., Wayne State University; Clinical Assistant Professor

HO, KHANG-LOON: M.D., Kachsiung Medical College; Clinical Associate Professor

HUNT, KRISTIN: M.D., University of Nebraska; Clinical Assistant Professor

INARDAR, KEDAR: Ph.D., Virginia Commonwealth University; M.B.B.S., Bharati Vidyapeeth Medical College; Clinical Assistant Professor

JIN, BO: M.D., Sun Yat-Sen University of Medical Sciences; Clinical Assistant Professor

JONES, BRUCE: M.D., Wayne State University; B.S., University of Michigan; Clinical Assistant Professor

KANDOUZ, MUSTAPHA: Ph.D., Universite de Paris; Assistant Professor

KELLER, CHRISTIAN: M.D., University of Tubingen Medical School; Clinical Assistant Professor

KOURLY, NABIHA: M.D., Damascus University of Medicine; Clinical Assistant Professor

KIM, HYEONG-REH: Ph.D., Northwestern University; Professor
KOLINS, MARK: M.D., Wayne State University; Clinical Assistant Professor
KUCY, GEORGE: M.D., B.S., Wayne State University; Clinical Assistant Professor
KUO, TUAN HUEY: Ph.D., Cornell University; Professor Emeritus
KUPSKY, WILLIAM J.: M.D., Harvard University; B.S., Massachusetts Institute of Technology; Professor (Clinician-Educator)
LEE, MENG-JER: McGill University; M.Sc., National Taiwan Yang-Ming University; Associate Professor
LEE, MIN WOO: M.D., B.S., Seoul National University; Clinical Associate Professor
LEFF, TODD: Ph.D., University of Indiana; Associate Professor
LOEWE, CHERYL: M.D., Ross University School of Medicine; Clinical Assistant Professor
LONG, PATRICK M.: Ph.D., Wayne State University; Clinical Assistant Professor
LOPEZ-PLAZA, ILEANA: M.D., Universidad Central del Caribe School of Medicine; B.S., Pennsylvania State University; Clinical Associate Professor
MADDIPATI, KRISHNA RAO: Ph.D., India Non-Medical School; Associate Professor (Research)
MAYER, THEODORE: M.D., B.A., University of Connecticut; Clinical Assistant Professor
MEIER, FREDERICK: M.D., McGill University; A.B., Dartmouth College; Clinical Professor
MILLER, FRED R.: Ph.D., University of Wisconsin; Professor
MOHAMED, ANWAR: M.D., Mosul Medical College; Professor (Clinician-Educator)
NANGIA-MAKKER, PRATIMA: Ph.D., Jawalralal Nehru University; Associate Professor (Research)
NEWMAN, BRUCE: M.D., University of Illinois Medical School; Clinical Associate Professor
ORMSBY, ADRIAN: M.D., Auckland Medical School, New Zealand; Clinical Associate Professor
PEEPLES, THOMAS C.: M.D., University of Franche-Comte; Clinical Instructor
PEVEN, DONALD: M.D., University of Michigan; Clinical Assistant Professor
PIMENTEL, JASON: M.B.B.S., University of New South Wales; B.A., University of Texas; Clinical Associate Professor
REDDY, KALADHAR B.: Ph.D., Osmania University; Professor
SAKR, WALE A.: M.D., University of Damascus; Professor and Chair
SALMNIA, HOSSEIN: Ph.D., Laval University; Associate Professor (Clinician-Educator)
SCHALDENBRAND, MICHAEL F.: M.D., Wayne State University; Clinical Assistant Professor
SCHULTZ, DANIEL: M.D., B.S., University of Michigan; Clinical Assistant Professor
SENGUPTA, MALA: M.D., Banaras Hindu University; Clinical Assistant Professor
SHAH, VEENA: M.B., B.S., BJ Medical College; Clinical Assistant Professor
SHENG, SHIJIE: Ph.D., University of Florida; Professor
SPANTA, RAHIMA: M.D., Kabul University of Medicine; Clinical Assistant Professor
SPITZ, WERNER U.: M.D., Hadassah Medical School; Clinical Professor
STONE, CHAD: M.D., University of Connecticut; B.A., Central Connecticut State University; Clinical Assistant Professor
STURTZ, DAVID: M.D., Medical College of Ohio; B.A., University of Toledo; Clinical Assistant Professor
SYKES, ELIZABETH: M.D., Royal Free Hospital School of Medicine; Clinical Assistant Professor
TORRES, FRANK: M.D., Universidad Autonoma de Guadalajara; Clinical Assistant Professor
TUTHILL, J. MARK: M.D., Creighton University; M.S., Georgetown University; B.S., University of Massachusetts; Clinical Assistant Professor
VAN EGMOND, EVE: M.D., Wayne State University; B.S., University of Detroit; Clinical Assistant Professor
WANG, JIAN: Ph.D., McGill University; Assistant Professor
WESLEY, RICHARD: D.D.S., M.S.D., Indiana-Purdue University School of Dentistry; Clinical Associate Professor
WIEBER, JOSEPH: M.D., University of Toronto; Professor
WILLIAMSON, SEAN: M.D., Temple University; B.S., Duquesne University; Clinical Assistant Professor
ZARBO, RICHARD: D.M.D., M.D., B.S., University of Connecticut; Clinical Professor
ZHANG, ZIYING: M.D., Tianjin Medical University; Clinical Assistant Professor

• Pathology (Ph.D.) (http://bulletins.wayne.edu/graduate/school-medicine/programs/pathology/pathology-phd)

PTH 7000 General Pathology Cr. 5
The structural and functional manifestations of disease. Concepts of biochemistry, physiology and cell biology are utilized in developing a dynamic approach to the study of the abnormal cell and its constituents. Basic mechanisms are stressed. Offered Fall.
Restriction(s): Enrollment is limited to Graduate level students.

PTH 7080 Special Topics in Pathology Cr. 1-15
Frontier areas in experimental pathology and clinical laboratory sciences. Format may be lecture, laboratory, or discussion; topics to be announced in Schedule of Classes. Offered Every Term.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 20 Credits
**PTH 7085 Critical Review of Scientific Publications Cr. 1**
For Ph.D. students in biomedical fields. Current experimental approaches in medical research. Offered Every Term.

**Restriction(s):** Enrollment is limited to students with a major in Pathology; enrollment limited to students in the PhD in Medicine program; enrollment is limited to Graduate level students.

**Repeatable for 5 Credits**

**PTH 7090 Signal Transduction and Cell Growth Regulation Cr. 3**
Signal transduction pathways, both cellular and molecular, and their alterations in cancer. Journal articles and instructor handouts used; emphasis on relationship to disease process. Offered Biannually (Winter).

**Prerequisites:** ([IBS 7010 with a minimum grade of C and IBS 7020 with a minimum grade of C] OR [IBS 7015 with a minimum grade of C])

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 5 Credits**

**PTH 7130 Neuropathology Cr. 2**
Offered Yearly.

**Prerequisites:** (PTH 7000 with a minimum grade of C)

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 5 Credits**

**PTH 7150 Pathology of Respiratory Tract Cr. 2**
Offered Yearly.

**Prerequisites:** (PTH 7000 with a minimum grade of C)

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 5 Credits**

**PTH 7180 Cardiovascular Pathology Cr. 2**
Gross, microscopic and submicroscopic anatomy and pathophysiology of cardiovascular disease, both human and experimental. Offered Yearly.

**Prerequisites:** (PTH 7000 with a minimum grade of C)

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 5 Credits**

**PTH 7330 Pathology of the Kidney Cr. 2**
Techniques of preparing renal biopsies for light and electron microscopy and immunofluorescent studies; ultrastructure of normal kidney; physiology of kidney - acute and chronic renal failure; glomerular disease; pyelonephritis; vascular disease; and acute tubular necrosis and renal transplantation. Offered Yearly.

**Prerequisites:** (PTH 7000 with a minimum grade of C)

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 5 Credits**

**PTH 7500 Systemic Pathophysiology Cr. 3**
Pathology and pathogenesis underlying abnormal physiologic function of major organ systems in humans. Offered Yearly.

**Prerequisite:** PSL 7010 with a minimum grade of C and BCH 7010 with a minimum grade of C

**Restriction(s):** Enrollment is limited to Graduate level students.

**Course Material Fees:** $25

**PTH 7890 Seminar Cr. 1**
Offered Yearly.

**Restriction(s):** Enrollment is limited to students with a major in Pathology; enrollment is limited to Graduate level students; enrollment limited to students in a Doctor of Philosophy degree.

**Repeatable for 12 Credits**

**PTH 7990 Directed Study in Clinical Pathology and Pathologic Anatomy Cr. 2**
Offered Yearly.

**Restriction(s):** Enrollment is limited to students with a major in Pathology; enrollment limited to students in the PhD in Medicine program; enrollment is limited to Graduate level students.

**Repeatable for 12 Credits**

**PTH 8000 Current Topics in Tumor Metastasis Cr. 3**
Advances in research on key aspects of tumor metastasis; emphasis on molecular mechanisms, tumor invasion, angiogenesis, and organ-specific tumor metastasis. Offered Fall.

**Prerequisites:** ([IBS 7010 with a minimum grade of C and IBS 7020 with a minimum grade of C] OR [IBS 7015 with a minimum grade of C])

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 5 Credits**

**PTH 8010 Molecular Biology of Diabetes and Obesity Cr. 2**
Basic principles and current research topics in the etiology and pathology of diabetes; diabetic complications and obesity. Offered Biannually (Fall).

**Prerequisites:** ([IBS 7010 with a minimum grade of C and IBS 7020 with a minimum grade of C] OR [IBS 7015 with a minimum grade of C])

**Restriction(s):** Enrollment limited to students with a class of Applicant Masters, Candidate Masters or Doctoral Candidate; enrollment is limited to Graduate level students.

**Repeatable for 12 Credits**

**PTH 9990 Pre-Doctoral Candidacy Research Cr. 1-8**

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 12 Credits**

**PTH 9991 Doctoral Candidate Status I: Dissertation Research and Direction Cr. 7.5**
Offered Yearly.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 12 Credits**

**PTH 9992 Doctoral Candidate Status II: Dissertation Research and Direction Cr. 7.5**
Offered Yearly.

**Prerequisite:** PTH 9991 with a minimum grade of S

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 12 Credits**

**PTH 9993 Doctoral Candidate Status III: Dissertation Research and Direction Cr. 7.5**
Offered Yearly.

**Prerequisite:** PTH 9992 with a minimum grade of S

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 12 Credits**

**PTH 9994 Doctoral Candidate Status IV: Dissertation Research and Direction Cr. 7.5**
Offered Yearly.

**Prerequisite:** PTH 9993 with a minimum grade of S

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 12 Credits**

**PTH 9995 Candidate Maintenance Status: Doctoral Dissertation Research and Direction Cr. 0**
Offered Yearly.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Course Material Fees:** $348.67

**Repeatable for 0 Credits**

**PTH 9999 Doct Diss Rsch&Dir Cr. 1-16**
Offered Yearly.

**Restriction(s):** Enrollment limited to students with a class of Doctoral Candidate; enrollment is limited to Graduate level students.