DOCTOR OF PHILOSOPHY IN THE FIELD OF CANCER BIOLOGY

The PhD in the field of cancer biology program focuses on the disease of cancer, ranging from molecular signaling underlying carcinogenesis to cancer genomics for improving detection, diagnosis, and treatment. While the training of cancer researchers has historically been accomplished by individual investigators in the traditional departments, the rapidly expanding knowledge base and complexity of modern genetic and molecular approaches necessitate an approach that is both broader-based, with respect to scientific discipline, and more focused, with respect to this disease entity.

The program begins with interdisciplinary coursework in genes, cells and systems in biomedical sciences, professional development in scientific communication and science careers, and laboratory rotations offered through GW's Integrated Biomedical Sciences program (https://ibs.smhs.gwu.edu/). After the first year of study, students work with their research advisor to complete remaining degree requirements, including the dissertation.

Program faculty are drawn largely from the GW School of Medicine and Health Sciences, including scientists from Children's Research Institute of Children's National Health System.

Students have access to extensive research facilities and libraries on campus and in the greater Washington, DC area. These include the School of Medicine and Health Sciences, GW's Gelman Library and Himmelfarb Health Sciences Library, the Children's Research Institute, National Institutes of Health, and numerous other research institutions.

The PhD in cancer biology is a STEM-designated program.

Visit the Integrated Biomedical Sciences program website (https://ibs.smhs.gwu.edu/) for additional information.

ADMISSIONS

Admission deadlines:	Fall – December 1
Standardized test scores:	The GRE general exam is not required.
	The Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the PTE Academic is required of all applicants except those who hold a bachelor's, master's, or doctoral degree from a college or university in the United States or from an institution located in a country in which English is the official language, provided English was the language of instruction.
	Minimum scores for the program are:
	- Academic IELTS: an overall band score of 7.0 with no individual score below 6.0; or
	- TOEFL: 600 on paper-based or 100 on Internet-based; or
	- PTE Academic: 68;
Recommendations required:	Three (3) recommendations
Prior academic records:	Transcripts are required from all colleges and universities attended, whether or not credit was earned, the program was completed, or the credit appears as transfer credit on another transcript. Unofficial transcripts from all colleges and universities attended must be uploaded to your online application. Official transcripts are required only of applicants who are offered admission.If transcripts are in a language other than English, English language translations must be provided. The English translation alone should be uploaded into your application.
Prerequisite requirements	A bachelor's degree in biological sciences, chemistry, or a related field.
Statement of purpose:	In an essay of 250 – 500 words, state your purpose in undertaking graduate study in your chosen field. Include your academic objectives, research interests, and career plans. Also discuss your related qualifications, including collegiate, professional, and community activities, and any other substantial accomplishments not already mentioned on the application.
Interview:	An interview is required.
Additional requirements:	A Curriculum Vitae is required.
International applicants only:	Please follow this link - https://columbian.gwu.edu/international-graduate-applicants (https://columbian.gwu.edu/international-graduate-applicants/) - to review the International Applicant Information carefully for details on required documents and English language requirements.

Supporting documents not submitted online should be mailed to:

Columbian College of Arts and Sciences, Office of Graduate Studies
The George Washington University
801 22nd Street NW, Phillips Hall 107
Washington DC 20052

For additional information about the admissions process visit the Columbian College of Arts and Sciences Frequently Asked Questions (https://columbian.gwu.edu/graduate-admissions-faq/) page.

Contact:

askccas@gwu.edu
202-994-6210 (phone)

Hours: 9:00 am to 5:00 pm, Monday through Friday

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (https://bulletin.gwu.edu/arts-sciences/#degreeregulationstext).

The requirements for the Doctor of Philosophy Program (https://bulletin.gwu.edu/arts-sciences/#doctoraltext).

72 credits, including required core, dissertation, and elective coursework. Successful completion of a grant-style qualifier examination is required for advancement to candidacy. In addition, students perform full-time research in faculty laboratories for the duration of their program.

Students are advised to complete 45 credits in the first two years of PhD study comprising required interdisciplinary core courses, required cancer biology core courses, electives, and advanced readings and research. Upon successful completion of the grant-style qualifier, students register for up to 27 credits of dissertation research through completion and successful oral defense of a written dissertation.

Code	Title	Credits
Required interdisciplinary core *		
BMSC 8210	Genes to Cells	
BMSC 8212	Systems Physiology	
BMSC 8215	Lab Rotations (taken three times for a total of 6 credits)	
BMSC 8216	Scientific Writing, Presentation Skills, and Seminar Planning	
BMSC 8217	Ethics and Grant Writing	
BMSC 8218	Career Options in the Biomedical Sciences	
BMSC 8230	Molecular Basis of Human Disease	
BMSC 8235	Applied Biostatistics for Basic Research	
Required cancer biology core *		
CANC 8214	Cancer Biology Seminar (Taken two times for a total of two credits)	
CANC 8221	The Basic Science of Oncology	
CANC 8222	Molecular Oncology and Cancer Epigenetics	
CANC 8223	Immunology and Immunotherapy of Cancer	
Electives		
14 credits elective courses selected in consultation with graduate program advisor.		
ANAT 6130	Clinically Oriented Human Embryology	
ANAT 6150	Clinically Oriented Human Microscopic Anatomy	
ANAT 6160	Human Clinical Neuroanatomy	
ANAT 6182	Fundamentals of Translational Science	
ANAT 6275	Advanced Studies in Translational Sciences	
ANAT 6292	Projects in Anatomical Sciences: Introduction to Neuroradiology	
BIOC 6240	Next Generation Sequencing	
BIOC 6242	Bioscience Big Data Statistics	
BIOC 6281	Topics	
BIOC 8225	Metabolism	
BIOC 8232	Molecular and Cellular Signaling	
BMSC 8219	Writing the Grant-Style Qualifier	
BMSC 8220	IBS Research Practicum	
CANC 8998	Advanced Reading and Research	
GENO 6223	Bioinformatics	
GENO 6236	Medical Genomics	
GENO 6237	Proteomics and Biomarkers	
GENO 8231	Introduction to Genomics, Proteomics, and Bioinformatics	
GENO 8232	Computational Biology and Bioinformatics: Principles and Practices	
MICR 6292	Tropical Infectious Diseases	
MICR 8210	Infection and Immunity	
MICR 8230	Molecular and Cellular Immunology	
MICR 8270	Advanced Topics in Immunology	
MICR 8271	HIV Persistence, Comorbidities, and Treatment	
NRSC 8284	Foundations of Experimental Neuroscience I	
NRSC 8285	Foundations of Experimental Neuroscience II	

PHAR 6116	Pharmacogenomics and Personalized Medicine
PHAR 6205	Pharmacology
PHAR 6206	Advanced Pharmacology
PHAR 6322	Advanced Professional and Communication Skills
PHAR 8211	Physiology
PHAR 8281	Molecular Pharmacology and Neurobiology of Excitable Tissues
PUBH 6276	Public Health Microbiology
PUBH 6278	Public Health Virology
PUBH 6861	Public Health Genomics
Dissertation research	
CANC 8999	Dissertation Research (taken for 6 to 27 credits)

*Required courses may be waived at the discretion of the graduate program director based on written documentation of prior equivalent coursework. Any waiver increases the number of elective courses required by the number of credits waived.