



**Academic Collaboration  
between  
Roswell Park Comprehensive Cancer Center  
and  
Jagiellonian University**

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**Training Opportunities at  
Roswell Park Comprehensive Cancer Center**

# Introduction

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- Roswell Park Comprehensive Cancer Center was founded in 1898 by Roswell Park, M.D. as America's first comprehensive cancer center
- Jagiellonian University, founded in 1364, is the oldest higher education institution in Poland
- The two centers will exchange students, staff and scientific resources to jointly undertake basic, translational and clinical research
- The goal of the collaboration agreement is to advance opportunities for students and development of new therapies to benefit patients worldwide

# Training Programs at Roswell Park

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- Clinical and Research Electives
- Post-doctorate Research Fellowship
- Basic Research Laboratory Training
- Research Scholar Training
- Core Facilities Training

# Training Programs at Roswell Park

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## ■ Clinical and Research Electives

- The training program is offered for current medical students that seek translational biomedical research and observational clinical (no hands-on) experience
- The goal of this program is to provide medical students with an opportunity to develop biomedical laboratory basic research skills combined with clinical knowledge
- Students will be trained in various subspecialties and have an opportunity to network and obtain letters of recommendation

# Training Programs at Roswell Park

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## ■ **Post-doctorate Research Fellowship**

- The training program offers doctors a great opportunity to practice research and medical oncology skills in an environment that fits candidates' qualifications
- The training program provides clinical and translational oncology research experience
- Candidates will be assigned and perform a translational oncology research project under the mentorship and direction of a Roswell Park principal investigator

# Training Programs at Roswell Park

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- **Basic Research Laboratory Training**
  - The training program is exclusively related to laboratory oncology research projects performed at Roswell Park
  - Candidates will be supervised by a designated Roswell Park laboratory staff and principal investigator
  - Candidates will participate in and perform a translational oncology research project to investigate a research project and generate data

# Training Programs at Roswell Park

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- **Research Scholar Training**

- The training program is available to health care professionals and medical staff
- The program offers training in multiple research disciplines and support
- Candidates will be assigned multiple tasks and complete a research project that utilizes data collected by the candidate during the training

# Training Programs at Roswell Park

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- **Core Facilities Training**

- The training program is offered for health care professionals and medical staff
- It provides candidates with the appropriate training to fully operate a functional scientific oncology core facility
- The training will be under the supervision of a core director and appropriate Roswell Park staff
- The training is offered in various core facilities



# Application Process

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## ■ Apply On-line

- Interested applicants must submit an online application by visiting: <https://www.roswellpark.org/oico/how-apply>

## ■ Additional Documents

- Applicants must submit the following documents by email to: [oico@roswellpark.org](mailto:oico@roswellpark.org)
  - Copy of updated resume or CV
  - Academic transcript
  - Proof of degree
  - English language proficiency

## ■ For additional information contact:

- The Office of International Collaboration in Oncology (OICO) at Roswell Park Comprehensive Cancer Center by phone [\(716\) 845-4949](tel:7168454949) or email [oico@roswellpark.org](mailto:oico@roswellpark.org)

# Training Disciplines and Fields

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- Biostatistics and Bioinformatics
- Cancer Genetics and Genomics
- Cancer Prevention and Control
- Cell Stress Biology
- Health Behavior
- Immunology
- Molecular and Cellular Biology
- Pharmacology and Therapeutics
- Shared Resources Facilities

# Biostatistics and Bioinformatics

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- **Department research interests include:**
  - Computational intensive statistical methods
  - Clinical trial design and analysis
  - Statistical genetics and genomics
  - Bioinformatics
  - Applied systems biology modeling
  - Epidemiological study design and analysis
  - Companion diagnostics
  - Electronic Health Records data coordination for research

# Cancer Genetics and Genomics

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- **Department research interests include:**
  - Investigate the mechanisms and pathways through which normal cells transform into tumor cells
    - The role of TNF, TGF $\beta$  and the microenvironment in apoptosis
    - Role of Src and FAK family tyrosine kinases in tumor biology
    - DNA methylation and epigenetics in cancer and normal cells
    - Epithelial-Mesenchymal transition and metastasis
    - Non-coding RNAs
    - Tumor-Associated fibroblasts in cancer microenvironment
    - Ribosome Biogenesis and cancer genetics
    - Hippo signaling pathway
  - Development of clinically relevant mouse models of advanced metastatic disease
    - Mouse-based molecular genetic analysis of trisomy 21
  - Developing new targeted molecular imaging agents for cancer

# Cancer Prevention and Control

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- **Department research interests include:**
  - Understanding the causes of cancer for prevention and targeting of high-risk populations
    - Understand the molecular and genetic underpinnings of cancer health disparities
    - Molecular epidemiology, biomarkers of susceptibility and exposure, to elucidate cancer etiology
  - Identification of markers for early detection and diagnosis
    - Cancer survivorship
  - Understand and prevent factors that impact morbidity and mortality of cancer diagnosis and treatment
    - The relationships between diet and cancer
    - The relationship between genes that influence Treg cell activity and cancer etiology and prognosis

# Cell Stress Biology

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- **Department research interests include:**
  - Scientific disciplines are chemistry, biochemistry, biophysics, biology, molecular biology and immunology
  - Define molecular and cellular stress (oxidative and thermal stress) mechanisms that aid in diagnosis or treatment of malignant disease
    - The use of photodynamic therapy to enhance anti-tumor immunity
    - Role of p53 in cancer
    - The mechanisms of cell stress response as targets for therapy and chemoprotection
    - Molecular modeling-based target-specific photosensitizers
    - Interstitial light therapy
    - Computer modeling and dosimetry for guiding light therapy
    - Tumor cell metabolism

# Health Behavior

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- **Department research interests include:**
  - Understanding all areas of tobacco control including research into the components of tobacco products, documenting and understanding tobacco marketing
    - Product-specific tobacco education
    - Tobacco product regulation
    - Risk perceptions of nicotine and tobacco products
    - Emerging chemicals of health concern
  - Mechanisms of tobacco addiction including patterns of tobacco use
    - Investigate neurocognitive processes associated with risky and addictive health behaviors
    - Secondhand marijuana smoke exposure
  - Investigate effective methods to train health care providers in the treatment of tobacco dependence

# Immunology

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- **Department research interests include:**
  - Understanding and utilizing the ability of the immune system to prevent, diagnose and treat human cancers
    - Elucidate molecular and cellular mechanisms of antitumor activities of immuno-oncolytic viral vectors against metastatic tumors
    - Defining molecular mechanisms by which lymphocytes kill tumor cells in vivo
  - Immunotherapy
  - Vaccines
  - Identifying and exploiting new targets for immunotherapy interventions for cancer or autoimmune disease
    - Defining cellular and molecular mechanisms for the regulation of autoimmunity by beta-catenin
    - The interplay of immunoregulatory cells with each other and their microenvironments



# Molecular and Cellular Biology

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- **Department research interests include:**
  - Investigate mechanisms governing normal development, differentiation and organismal homeostasis
    - Stem cells and stem cell microenvironment
    - Glycobiology of cell-cell interactions
    - RB-tumor suppressor pathway in the progression of cancer
    - Analysis of biological control mechanisms
  - Animal models for genetic and epigenetic analysis of cancer susceptibility
    - Elucidating the functional contribution of glycan epitopes in normal and malignant processes
  - Defining rationally targeted therapeutic interventions
    - Cancer progression and regulatory control of DNA replication and developmental regulatory networks
    - Cell cycle control in cancer as a therapeutic target

# Pharmacology and Therapeutics

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- **Department research interests include:**
  - Identification of novel molecular targets for therapeutic intervention
    - Stem cell development
    - Mechanism of p53 regulation
  - Characterizing the mechanisms of action and preclinical development of novel drugs
    - Oxidative phosphorylation and reactive oxygen species
  - Optimizing the use of existing drugs through combination therapy, re-purposing and imaging
    - Anticancer therapeutics and phytochemicals
    - Developing novel epigenetic inhibitors for cancer treatment
    - Mechanisms of drug resistance and how to overcome them
    - Targeted cancer treatment and personalized/precision medicine

# Shared Resources

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- Bioanalytics, metabolomics and Pharmacokinetics
- Bioinformatics
- Biomedical Data Science
- Biostatistics
- Data Bank and BioRepository
- Flow and Image Cytometry
- Gene Targeting and Transgenic
- Genomics
- Hematologic Procurement
- Immune Analysis Facility
- Investigational Drug Services
- Laboratory Animal
- Nicotine and Tobacco Product Assessment
- Onsite Research Supply Center
- Pathology Network
- Rapid Tissue Acquisition Program
- Small Molecule Screening
- Therapeutic Cell Production
- Translational Imaging

For further information, please contact Jolanta Jura  
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