

Case Comprehensive Cancer Center Strategic Plan 2018-2023

Mission: Apply scientific discoveries in human cancers to improve lives through cancer prevention, detection, treatment, cure, and survivorship

Objective

Multi-Investigator Initiatives Incorporating Paradigm Shifting Discoveries

Underserved Populations and Disparities Research

Immune Cancer Biology (ICB) & Therapeutics

Drug Discovery & Development for Clinical Utility

Population Risk assessment, risk reduction – lifestyle, familial germline, environment

Big Data, & Analytics: Genomics, Omics & EMR Studies, Digital & Molecular Imaging

Human Tumor Model based research

Integrated Cancer Research, Training and Career Enhancement

Implementation

-GI SPORE
-Cancer immunology
-Brain, Breast, Ovarian, Prostate, AML/MDS WGS
-Imaging and therapeutics
-Cancer disparities

-Tobacco exposure
-Lung cancer screening
-Disparities research in colon, breast ovarian, prostate, AML/MDS

-Cancer - immunobiology & therapy
-Cell therapy
-Immune monitoring
-Microbiome

-Drug screening
-Medicinal chemistry - Nano Rx, drug resistance
-imaging
-Genomics
-Early phase clinical trials

-Early detection
-MRF imaging, - Genomic prognostics
-Population validation
-Policy efforts to improve detection

-EMR warehouse
-Universal Informed consent
-Genomics: discovery, digital pathology and imaging

-PDX & organoid human tumor research in:
-Pathways
-Drug development and resistance, ICB;
-Omics

-Cancer training
-T32s: Cancer biology, Nano-medicine, Stem cells
-K12 Scholars
-Mentoring at all levels

Leadership goals: Focus on our catchment. Expand Case CCC recognition through NCI, NCCN, AACI, societies and collaborations across centers. Increase philanthropic support of cancer research.

GI Cancer Genetics Strategic Plan 2018-2023

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GI SPORE

-BETRNet
EDRN

-Cross-Center evaluation of AA gene panel

-Multi-PI RO1s: Epigenetics, Systems Bio

Gene panel in AA colon cancer Epigenetic markers for screening esophageal cancer cohorts

Genetic/epigenetic markers of disease progression

-CRISPR mice to validate new targets

-Drug screens

-PGDH Inhibitors

-Stool DNA Test

-BE detection device

-Therapies targeting glutamine in PIK3CA mutant CRC Predicting Aspirin Responders

Integration of genetic, epigenetic, proteomic, and transcriptomic data of Cleveland GI cancer population

Recruit organoid expertise for HTS/drug development Systems bio/identify drivers Recruit in pancreatic cancer

SPORE Career Development Awards

-Lead Cancer Biology/ Clinical Interface course

-Functional Genomics T32

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Molecular Oncology Strategic Plan 2018-2023

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Implementation

-Brain tumor P01 (Late stage, May 2018)
 -HCC P01 (Mid-stage, Fall 2018)
 -HNC P01 (Early stage, 2018-9)
 -Glioma stem cell P01 (Early stage, 2018)

-Obesity and liver and breast cancer research
 -TNBC metastasis in African Americans

-Role of inflammation in obesity and cancer (HCC)
 -Role of immune surveillance in tumor initiation and progression

Promote IND and clinical trials of in-house new drugs targeting
 1) EphA2;
 2) trans differentiation of GSC

-Circulating MDSC cells.
 -Shedding of Ephs and ephrins

-RNAseq of drug-treated mouse and human cancer cells
 -Single cell sequencing

-Expand the existing programs in PDX of breast cancer, HCC, GBM
 -CRISPR-CAS knocking in and knockout

-Renew two T32s
 -Continue and expand the junior faculty mentoring
 -Coord. postdoc recruitments locally/ nationally

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GU Malignancies Strategic Plan 2018-2023

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Implementation

<p>-Androgen axis prostate research</p>	<p>Prostate education efforts</p>	<p>Immune microenvironment & therapeutic trials in RCC & Bladder</p>	<p>-Neoadjuvant trials across all diseases -Organoids IITs based on prostate and renal</p>	<p>-IITs based on prostate and renal lab discoveries -Functional imaging</p>	<p>Develop clinical utility of prostate and renal genomics efforts</p>	<p>Bladder cancer Org/PDX</p>	<p>Continue mentorship of Fellows and Jr. faculty</p>
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Heme and Immune Cancer Biology Strategic Plan 2018-2023

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Implementation

Genomic based therapeutics for AML/MDS
 Functional biology of MDS mutations

Validate mutation prevalence and etiology in minority populations

-NK, DC, T-cell, CAR-T cell based therapeutics
 -Immune Monitoring SR

-Demethylase, immune-cell based & mutation targeted therapeutics
 -Mutation stratified Rx

-Risk assessment of heme mutations &
 -Aging hemato-piesis

MDS Classification
 MDS- African Americans
 Lymphoid genomics outcomes monitoring

AML, MM, PDX for pathway & Rx development

-T32 heme malignancies
 -K-12 training
 -Cell therapy training
 -Stem Cell Masters

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Developmental Therapeutics Strategic Plan 2018-2023

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Implementation

-Cancer Drug resistance
-Nucleotide, DNA repair & RNR targets
-P53 mutant tumor therapies

-Novel Rx for SC/NSC lung cancers
-TNBC therapeutics

-Checkpoint inh comb.
-CDK5, TGFb, demethylation Rx
-5FU inh of MDSC

Drug development medic chem., preclin models, PDX, biomarkers, genomic based RX

Early phase drug discovery & develop CTEP studies NCTN phase 2

-Biomarker predictors of response case finding, CT education
-Minority Accruals

Multi tumor preclinical assessment of drug efficacy

-K12 CORP in therapeutics
-Nanotherapeutics T32

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Cancer Imaging Strategic Plan 2018-2023

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Implementation

-P01 MRF prostate cancer (Gulani)
-P01 Nano-medicine (Exner)

-Maintain a pipeline of technology development for prostate cancer imaging

-Potential development of immunoPET imaging (second in man, collaborative with our CCCC community)

-Brain, liver, skin, ovarian, breast, and prostate cancers (PDX);
-Optical, MRF, PET imaging in early phase trails. Open routine collaborative discussions with DT
-CI investigators will be encourage to adopt PDX models

-Nuclear (PET) Medicine, & MRI (MRF) for diagnosis & treatment monitoring

Involvement of radiomics and development of AI for improving diagnosis/prognosis via *Center for Computational Imaging and Personalized Diagnostic*

Expand U01, Karathanasis, Add pediatric and other cancer PDX models, bring in organoid from CCCC members for probe development

-T32 nano (re-submission)
-T32 BME Imaging

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Cancer Prevention and Control Strategic Plan 2018-2023

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Implementation

-GI Spore Disparities Spore Develop P01 on obesity and cancer

-Disparities research in colon, breast, prostate cancers
 -Lung cancer screening
 -Cancer in rural areas

-Microbiome and colon, breast and head and neck cancers

-Dissemination and implementation of new technologies
 -Policy efforts to improve uptake of evidence-based interventions

-Develop cohorts of high risk patients
 EMR-based resources for measuring cancer related outcomes

-Pursue trainee and minority R01 supplements
 -T32 in computational genomics
 -Spore career development awards

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