RNA AND SPATIAL TRANSCRIPTOMICS

Faculty Profiles | Johns Hopkins University

JOHNS HOPKINS UNIVERSITY

JOHNS HOPKINS TECHNOLOGY VENTURES

BETHANY POWELL GRAY, PH.D.

Assistant Professor, Pharmacology and Molecular Sciences; Assistant Professor, Oncology

AREAS OF SPECIALIZATION

Aptamers, RNA therapeutics, pharmacology, nucleic acid chemistry

SUMMARY OF WORK

Dr. Gray's work in RNA therapeutics focuses on:

- Novel and stable RNA aptamers against disease targets
- E3 RNA aptamer with selective uptake in prostate cancer
- Tunable cytotoxic aptamer-drug conjugates in prostate cancer

RANJAN PERERA, M.S., PH.D.

Assistant Professor, Pharmacology and Molecular Sciences; Assistant Professor, Oncology

AREAS OF SPECIALIZATION

lncRNA, miRNA, melanoma, medullablastoma.

SUMMARY OF WORK

Dr. Perera's work in RNA therapeutics focuses on:

- LncRNAs and their endogenous binding partners: SPRIGHTLY-PTBP1
- miRNAs as metabolic switch and therapeutic target in melanoma: MIR211 in melanoma
- miRNA as regulators of disease-specific expression: MIR211 in tumor microenvironment and MIR196 in adipose tissue
- lncRNAs as therapeutic modality: Lnc-HLX-2-7 in pediatric medulloblastoma
- Circular RNAs as therapeutic target: circRNA Edis

SHUYING SUN, PH.D.

Associate Professor, Physiology; Associate Professor, Neuroscience; Associate Professor, Pathology

AREAS OF SPECIALIZATION

RNA biology, RNA metabolism, RNA-mediated toxicity, neurodegeneration.

SUMMARY OF WORK

Dr. Sun's work in RNA therapeutics focuses on:

- Antisense oligonucleotides against repeat-containing RNAs: ALS, frontotemporal degeneration (FTD)
- Proteins that modulate RNA phenotypes: DDX3x, RNA helicase
- Binding and mechanisms of splicing modulators (proteins) for therapeutic development: SRSF1, RBFOX1/2

SEYED FATEMI, M.D., MBA

Professor, Neurology; Professor, Pediatrics; Chief Medical Officer, Kennedy Krieger Institute; Director, Division of Neurogenetics

AREAS OF SPECIALIZATION

Neurogenetics, cerebral palsy, therapeutic development.

SUMMARY OF WORK

Dr. Fatemi work in RNA therapeutics focuses on:

– Antisense oligonucleotides against rare diseases

SHAWN LUPOLD, PH.D.

Catherine Iola and J. Smith Michael Distinguished Professor of Urology; Co-Director, The Sidney Kimmel Comprehensive Cancer Center Prostate Cancer Program; Professor of Urology; Assistant Professor of Radiation Oncology and Molecular Radiation Sciences; Professor of Oncology

AREAS OF SPECIALIZATION

Urological oncology, microRNAs, siRNAs, gene/drug delivery, nanoparticles.

SUMMARY OF WORK

Dr. Lupold's work in RNA therapeutics focuses on:

- Modulating RNA via microRNAs in the prostate cancer phenotype
- Modulating RNA via targeted siRNAs
- Modulating cancer ligands through RNA aptamers

TED DEWEESE, M.D., PH.D.

Dean of the Medical Faculty and CEO, Johns Hopkins Medicine

AFFLIATIONS

The Sidney Kimmel Professor of Radiation Oncology and Molecular Radiation Sciences; Vice President for Interdisciplinary Patient Care, Johns Hopkins Medicine; Radiation Oncologist -in-Chief; Professor of Radiation Oncology and Molecular Radiation Sciences; Professor of Oncology; Professor of Urology

AREAS OF SPECIALIZATION

Bladder cancer, prostate cancer, urological oncology, radiation oncology, cancer-targeted RNA, androgen receptor signaling

SUMMARY OF WORK

Dr. DeWeese's work in RNA therapeutics focuses on:

- siRNA-targeting DNA repair protein is combined with an aptamer targeting the prostate-unique protein, prostate specific membrane antigen (PSMA).
- The chimeric siRNA-aptamer that is a potent, targeted radiosensitizer with potential for translation into prostate cancer therapy.

JEFF COLLER, PH.D.

Bloomberg Distinguished Professor RNA Biology and Therapeutics;
Professor, Molecular Biology and Genetics

AREAS OF SPECIALIZATION

RNA therapeutics, mRNA translation, mRNA stability.

SUMMARY OF WORK

Dr. Coller's work in RNA therapeutics focuses on:

- Modulating RNA levels: Tethered mRNA amplifier
- Modulating RNA stability: Codon optimization
- Modulating RNA translation efficiency: Acetylation of cytidine and mRNA deadenylation via CCR4

BIN WU, PH.D., M.PHIL.

Assistant Professor of Biophysics and Biophysical Chemistry; Assistant Professor of Neuroscience

AREAS OF SPECIALIZATION

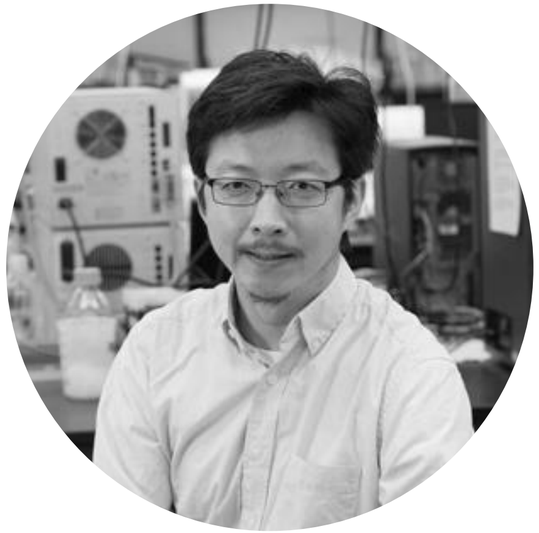
RNA biology and RNA life-cycle.

SUMMARY OF WORK

Dr. Wu's work in RNA therapeutics focuses on:

- A rapid inducible RNA decay system (RIRD)
  - Works ~30min vs 2-3h using siRNA (in collaboration with JHU's Takanari Inoue)

JIOU WANG, M.D., PH.D.



Walder Distinguished Professor, Biochemistry and Molecular Biology

AREAS OF SPECIALIZATION

RNA biology, RNA homeostasis, neurodegeneration.

SUMMARY OF WORK

Dr. Wang's work in RNA therapeutics focuses on:

- RNA binding proteins involved in miRNA gene silencing
  - Fused in sarcoma (FUS) regulates microRNA mediated gene silencing

REBECCA SHULMAN, PH.D.

Associate Professor, Chemical and Biomolecular Engineering and Computer Science; Kent Gordon Croft Investment Management Faculty Scholar

AREAS OF SPECIALIZATION

Biomedical engineering, transcription, nanobiology, synthetic biology.

SUMMARY OF WORK

Dr. Shulman's work in RNA therapeutics focuses on:

- RNA aptamer-regulated transcription
- Assembly or disassembly of DNA/RNA components

ALEKSANDER POPEL, PH.D.

Director, Systems Biology Laboratory; Professor of Biomedical Engineering, Professor of Medicine; Professor of Oncology

AREAS OF SPECIALIZATION

Immunoengineering, controlled drug delivery, autoimmune and cancer disease models.

SUMMARY OF WORK

Dr. Popel's work in RNA therapeutics focuses on:

- Design and development of therapeutic peptides
  - Biomimetic peptides for treatment of angiogenesis-dependent diseases
- Integrating transcriptional and proteomic data
  - Reduced invasion after GFPT2 shRNA knockdown in hepatic cellular carcinoma (in collaboration with P Tran, E Fertig, A Ewald at JHU)

JOSH DOLOFF, PH.D.

Assistant Professor, Biomedical Engineering; Assistant Professor, Materials Science and Engineering

AREAS OF SPECIALIZATION

Therapeutic peptides, systems pharmacology, angiogenesis.

SUMMARY OF WORK

Dr. Doloff's work in RNA therapeutics focuses on nanoparticle delivery and includes methods for:

- Endothelial delivery of siRNA
- Reprogramming tumors through targeted mRNA delivery
- Self-amplifying mRNA (SAM) as vaccine strategy

SCOTT WILSON, PH.D.

Assistant Professor, Biomedical Engineering

AREAS OF SPECIALIZATION

Immunoengineering, biomedical engineering, biomaterials.

SUMMARY OF WORK

Dr. Wilson's work in RNA therapeutics focuses on:

- Programmable cytokine-targeted siRNA localizing to sites of inflammation for gene regulation
  - TNFalpha-siRNA to inhibit inflammation in the intestines

RELEVANT JHU INSTITUTES AND CENTERS

JOHNS HOPKINS DRUG DISCOVERY

The Program works with researchers across Johns Hopkins Medicine to research and develop tomorrow's therapeutics for a wide range of human disorders including drug discovery projects in Oncology, Immunology, Neurology, Psychiatry, Ophthalmology, and Gastrointestinal disorders.

SIDNEY KIMMEL COMPREHENSIVE CANCER CENTER

Within SKCCC, clinicians and research scientists work closely together to develop new drugs and therapies to provide patients with cutting edge options for cancer care.

CHEMICAL AND BIOMOLECULAR ENGINEERING

The department is known for making an impact through innovative engineering research across a variety of disciplines including drug development and delivery.

INSTITUTE OF NANOBIOTECHNOLOGY (INBT)

The INBT is a multidisciplinary team of faculty, researchers, and student experts uncovering new knowledge and creating innovative technologies at the interface of nanoscience, engineering, biology, and medicine