



**Dana-Farber**  
Cancer Institute

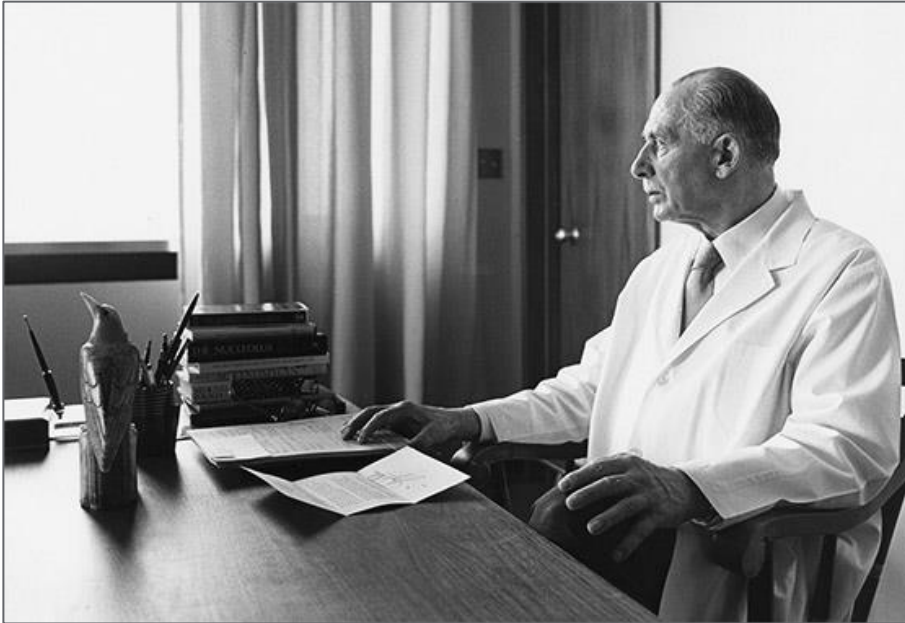
# **Introduction to Innovation at Dana-Farber**

## **KDDF C&D Tech Fair 2023**

**Emy Chen, PhD**  
Vice President, Innovations

# 75 YEARS OF IMPACT

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*"I have never accepted the incurability of cancer. And, I have remained hopeful, not because of wishful thinking — that's not progress — but because of the factual evidence of progress."*

— Sidney Farber, MD

**Sidney Farber, MD, created the bench to bedside philosophy  
that we still embrace today**

# OUR MISSION

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To **provide expert, compassionate and equitable care** to children, adults and their families, while **advancing the understanding, diagnosis, treatment, cure, and prevention** of cancer and related diseases.

We **provide training** for new generations of physicians and scientists, disseminate **innovative patient therapies and scientific discoveries** around the world, and **reduce the impact of cancer**, while at all times maintaining a focus on these communities that have been historically marginalized.

# INSTITUTE OVERVIEW

- Main location in Boston
- Community-based locations around Boston so patients receive care closer to home
- Clinical relationships:
  - Domestic (Maine, Rhode Island, Connecticut)
  - International (Bermuda, Brazil, China, Rwanda, Egypt)
- **FY21 facts:**



**\$2.26 billion**  
Annual Revenue



**6,177**  
Employees  
(Full and Part-time)



**HARVARD MEDICAL SCHOOL  
TEACHING HOSPITAL**



**478**  
Faculty Members  
(MD, PhD and MD/PhD)



**856**  
Registered Nurses



**188,242**  
Infusion Treatments



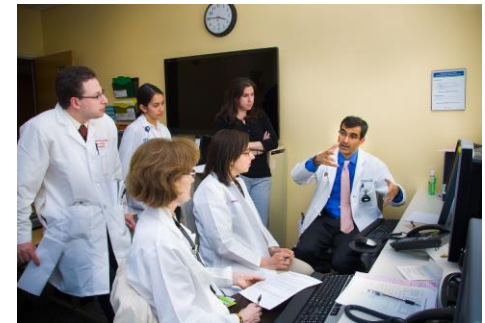
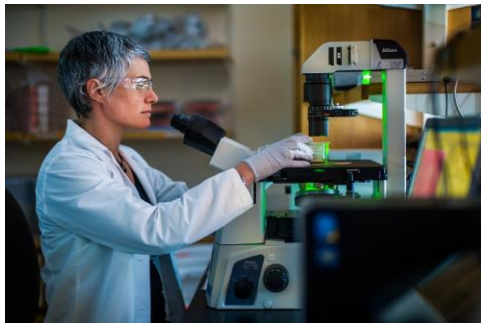
**1,100+**  
Clinical Trials

# COMMITMENT TO **DISCOVERY & INNOVATION**

- **276 NIH-sponsored research grants**
- **Top academic recipient of grant funding** from the National Cancer Institute (NCI)
- The **highest impact of scientific publications** of the 12 leading cancer centers in the United States
- DF/HCC investigators contributed substantively to **55 of 142 FDA oncology approvals** since 2010 or in the last decade



A Cancer Center Designated by the  
National Cancer Institute





# GROUNDBREAKING DISCOVERIES & INITIATIVES

## **Achieved**

the first remissions in cancer with chemotherapy in 1948

## **First-ever**

remissions of childhood leukemia

## **Discovered**

the pathways to PD-L1 and PD-L2—a breakthrough that ignited the field of immunotherapy

## **Pioneered**

use of one's own stem cells in bone marrow transplantation in 1972

## **First**

Patient-Family Advisory Councils in the country

## **Nobel Prize**

Baruj Benicerraf, MD (1980)  
William G. Kaelin, MD (2019)

# SELECT RESEARCH CORES & CENTERS

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- **Center for Cancer Therapeutic Innovation** – design and conduct phase 1 clinical trials in oncology
- **Connell and O'Reilly Families Cell Manipulation Core** – manufacturing and R&D in cell-based therapy
- **DF/HCC (Dana-Farber/Harvard Cancer Center)** – research consortium with shared resources and collaborative environment for over 1,100 cancer researchers at 7 Harvard affiliated institutions
- **Medicinal Chemistry Core** – design, synthesis and lead optimization of small molecule compounds
- **Robert and Renée Belfer Center for Applied Cancer Science** – produce innovative cancer models, partner with industry to accelerate the development of therapies to treat cancer

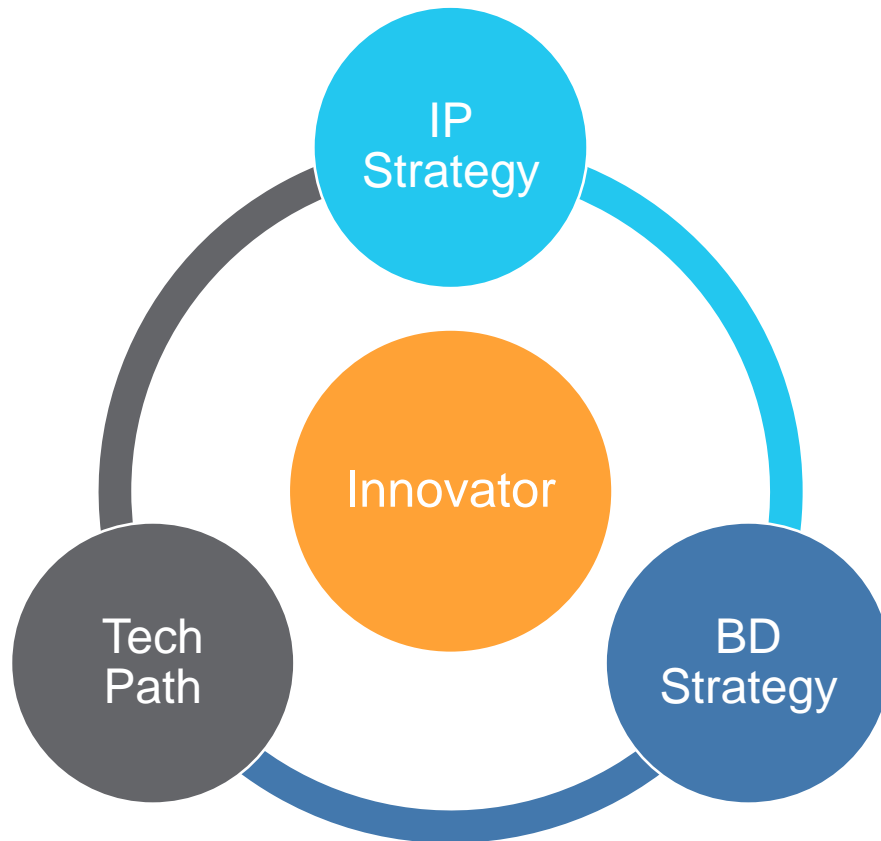


# INTEGRATED STRATEGY TOWARDS THE CLINIC

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facilitate,  
collaborate,  
& innovate.

Robert & Renee Belfer  
Office for Dana-Farber  
Innovations



## Dynamic evaluation

- ✓ Science
- ✓ IP strength
- ✓ Market
- ✓ Clinical viability
- ✓ Team cohesiveness



# WORLDWIDE COLLABORATIONS



TAIHO PHARMA



# START-UP CREATION \*\*



**\*\* Publicly announced**

# PARTNERING **OPPORTUNITY**

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## Antisense Oligonucleotide (ASOs) Inhibitors of Long Noncoding RNAs for the Treatment of Multiple Myeloma

- **Benefits** – Chemical modifications to ASOs increase cellular uptake, increase resistance to enzymatic degradation, limit off-target toxicity
- **Indications** – Multiple myeloma and other cancers; Non-alcoholic steatohepatitis (NASH)
- **Data Package** – Pre-clinical proof of concept in xenograft mouse model of myeloma
- **IP Status** – PCT filing pending
- **Opportunity** – Licensing

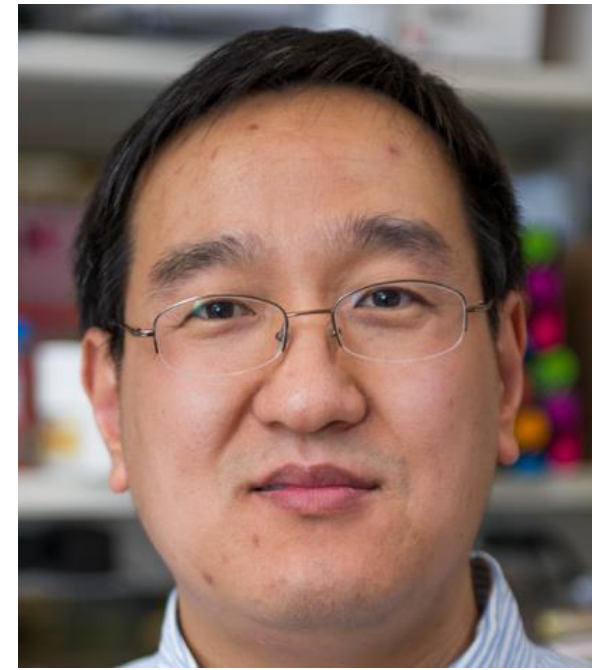


**Nikhil Munshi, MD**

# PARTNERING OPPORTUNITY

## LMP1-Based Approaches to Producing Multi-specific CD4+ CTLs for Cancer Immunotherapy

- **Benefits** – Quick generation of CD4+ CTLs, applicable as adoptive cell transfers, can be administered with checkpoint blockade therapy; long-lasting antitumor immunity due to in vivo persistence
- **Indications** – B cell malignancies; other cancers
- **Data Package** – Pre-clinical proof of concept in murine lymphoma model and human chronic lymphocytic leukemia (CLL) cells
- **IP Status** – Worldwide filings pending
- **Opportunity** – Development/Partnering, Licensing, Investment



**Baochun Zhang, MD, PhD**

# PARTNERING OPPORTUNITY

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## Novel histone deacetylase (HDAC) inhibitors to specifically disrupt the transcriptome of cancer cells

- **Benefits** – As efficacious as existing HDAC inhibitors, less perturbation of off-target HDACs (less toxicity and adverse effects expected)
- **Indications** – Haematological cancers, psychosis, schizophrenia
- **Data Package** – Validated hits n pre-clinical cellular assays
- **IP Status** – PCT filing pending
- **Opportunity** – Development/Commercial Partnering, Licensing



**Marc Vidal, PhD**

# PARTNERING OPPORTUNITY

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## Small molecules that Block Proteasome-Associated Ubiquitin Receptor RPN13 Function

- **Benefits** – Degradation induced cell death more efficient than small molecule treatment alone
- **Indications** – Multiple myeloma; cancer with elevated ER stress/ubiquitin-proteasome system signaling
- **Data Package** – Pre-clinical proof of concept in mouse xenograft models
- **IP Status** – Issued US patent, pending worldwide filings
- **Opportunity** – Development Partnering, Sponsored Research



**Jun Qi, PhD**

## **KDM5 Selective Inhibitors for the Treatment of Multiple Myeloma and Other KDM-dependent Diseases**

- **Benefits** – Superior potency and high selectivity compared to other KDM5 inhibitors
- **Indications** – Multiple myeloma; cancer with KDM5A-dependent malignancies
- **Data Package** – Pre-clinical proof of concept in cell assays and mouse xenograft models
- **IP Status** – Pending worldwide filings
- **Opportunity** – Licensing



**Jun Qi, PhD**

# PARTNERING **OPPORTUNITY**

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## Targeting TIRR for Cancer Therapy: A Novel Target for p53 Reactivation

- **Benefits** – Broad application to 50% of cancers
- **Indications** – Multiple p53<sup>+</sup> tumor types including breast, pancreas, prostate and renal cancers
- **Data Package** – Validated target
- **IP Status** – Know How
- **Opportunity** – Development Partnering, Sponsored Research



**Dipanjan Chowdhury, PhD**



# PARTNERING **OPPORTUNITY**

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## Novel pyrazolopyridine and steroid-based small molecule inhibitors and PROTAC degraders

- **Benefits** – High potency and selectivity with negligible off-target binding
- **Indications** – Multiple cancers (solid tumors and blood); autoimmune diseases
- **Data Package** – Pre-clinical proof of concept in cellular assays
- **IP Status** – Worldwide filings pending
- **Opportunity** – Development Partner, Licensing



**Nathanael Gray, PhD**

# PARTNERING OPPORTUNITY

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## Highly Selective Focal Adhesion Kinase (FAK) Inhibitors

- **Benefits** – High selectivity for cancers where FAK is overexpressed
- **Indications** – Multiple cancers, including gastric and breast
- **Data Package** – Pre-clinical proof of concept in 3D organoid models of cancer
- **IP Status** – Worldwide filings pending
- **Opportunity** – Licensing



**Nathanael Gray, PhD**

# THANK YOU

