



## Leveraging Collaboration and Interdisciplinary Science

The Ellison Institute addresses pressing challenges in cancer care and promotes innovation through the integration of clinically driven science and applied engineering.

Guided by our Chief Scientific and Innovation Officer, Dr. Jerry S.H. Lee, the Ellison Institute's overarching objective is the rigorous and rapid deployment of novel technologies to enhance clinical practice, diagnostics, and research. These

The combination of our public-private partnerships, our novel approach to interdisciplinary research, and our robust data from an ever-growing biorepository enables the Ellison Institute to accelerate advancements in research and patient care.

As a research and technology hub, we help physicians and scientists expand their capabilities to take vital cancer research to the next level.

technologies could provide better cancer detection techniques, improve the extraction of multi-dimensional (e.g. biochemical and biophysical) data from biological and clinical samples, and/or aid in the creation of novel models to capture detailed physiological information about the human body.

Expert scientists, physicians, and thought leaders from around the world are invited to become visiting faculty at the Institute. We aim to bring insight and ingenuity to surmount hurdles that have been plaguing researchers and physicians for years.

"I believe we can advance our research to the next level, allowing the most effective treatments to benefit patients who are in urgent need of new therapies today."

## Research Laboratories

### Artificial Intelligence in Medicine

We apply Artificial Intelligence techniques to discern otherwise hidden clinical information from the tumor micro-structure. Our methods highlight important aspects of tumor architecture, both in 2D and 3D, that impact patient outcome.

### Multiscale Biology Lab

The Multiscale Biology Lab studies the composite of an individual from the single cell level through the composite perspective that looks at the collections of cells that creates the various tissues and organs.

### Drug Discovery Lab

Our cancer researchers are working with chemists to modify and/or develop the next generation of drugs that will change cancer treatment and help minimize toxic side effects thereby increasing quality of life for patients.

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### Molecular Analytics Lab

Genomics only tell us one part of the picture. Our Institute incorporates the other "omics" such as proteomics and metabolomics, to gain a better understanding of the whole biological system; thus going beyond the genes.

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### Applied Therapeutics Lab

Our Institute uses this lab to test & refine the knowledge gained about an approved drug after the drug is used in a real world population. This testing helps us make sure we are using the best drugs possible for real world applications.

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### Microenvironment Lab

Tumors need a receptive environment to grow. Here we are applying multidisciplinary approaches to better understand the interactions between the tumor "seed" and microenvironment "soil". We are devising ways to disrupt this supportive environment and prevent tumors from growing.

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### Biomimetic Models Lab

Solid tumors encounter various microenvironments with respect to cell types and oxygen gradients that impact drug response. Technologies such as the hypoxia chamber and organs-on-chips platforms allow us to better mimic tumors and their associated microenvironments in a patient-specific manner.

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### Proving Grounds

A place where the future meets the here & now, as we combine the latest technologies in medicine and engineering. We are privileged to evaluate these technologies from academic and industry leaders and use them to further advance our research.

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### Immersive Visualization Lab

Experience the future of collaboration and learning through a dedicated lab created with three interactive screens for in-room and virtual user experiences.

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### Integrative Microscopy Lab

Our state-of-the-art microscopes provide a unique window into cellular interactions and real-time information on a cancer cell's response to therapy.

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