This center is a unique and intensive endeavor to transform cancer care through genomic analysis of patient-derived tumors.

The History of the Center for Molecular Oncology

The Marie-Josée and Henry R. Kravis Center for Molecular Oncology (CMO) is a team of laboratory, computational, and clinical researchers at Memorial Sloan Kettering working together to translate new genomic technologies and molecular insights into diagnostic tools and individualized therapies. Established with a gift of $100 million from Marie-Josée and Henry R. Kravis Foundation, the CMO brings together researchers with many different areas of expertise — including cancer biology, pathology, bioinformatics, and systems biology — to undertake a vast, translational research program. For every type of cancer, archived tumor specimens and tissues obtained in clinical trials are comprehensively profiled using next-generation sequencing and other technologies. The molecular information of each tumor is then correlated with clinical data, including the patient's outcome and response to therapy.

Goals of the Center for Molecular Oncology

The goal of the CMO is to expedite and streamline cancer genomics research to guide cancer treatment. Ultimately our vision is to fully deliver on the promise of precision oncology and to create better treatment options for all people with cancer. Thanks to our powerful combination of clinical and scientific resources focused exclusively on cancer, Memorial Sloan Kettering is in a unique position to reach this ambitious goal. The Marie-Josée and Henry R. Kravis Center for Molecular Oncology spans the full range of activities required to translate molecular insights into clinical innovations — from procuring and archiving patient tissues to pioneering the latest diagnostic tests and targeted therapies.

Impact on Clinical Care

The CMO has become an essential partner in the care that MSK provides people with cancer by ensuring that genomic sequencing with MSK-IMPACT® is offered as part of each patient's diagnosis and care plan. Molecular information from tumors is linked with clinical data, including the patient's outcome and response to therapy over time. These correlations guide each person's care and can help doctors predict how future patients will respond to various treatments. The specialized teams that make up the CMO are at the heart of this process, supporting both researchers and clinicians with the tools needed to generate and interpret genomic data, then apply their insights in the lab or the clinic.

MSK-IMPACT®

MSK-ACCESS®

Direct enrollment to precision oncology trials

OncoKB

Clinical Genetics Service

Clonal Hematopoiesis Clinic

Data Sharing

The CMO was founded with a fierce commitment to sharing information and resources to ensure that MSK patients and scientists were not the only ones benefiting from its expertise. Data from MSK-IMPACT®, MSK-ACCESS®, and other genomic testing led by researchers affiliated with the CMO has fueled the establishment of freely available databases that have informed research studies and cancer care on nearly every continent

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The Cancer Data Science Initiative

The Cancer Data Science Initiative (CDSI) is a strategic initiative led by Dr. Nikolaus Schultz , started as part of Memorial Hospital Translational Research in partnership with Computational Oncology and DigITs. Its mission is to support translational research at Memorial Hospital by abstracting and integrating real-world patient data from different clinical resources in near real-time and making it available in a deidentified format to clinicians, biologists, and computational scientists across the institution. Following the guidelines developed by Memorial Hospital (MH) Research Data Governance, CDSI aims to build on the success of the institution-wide MSK-IMPACT® data-sharing model and expand it to include clinical annotations, treatment and response data, and eventually data elements derived from pathology and radiology images. The initiative aims to provide a dynamic and modular data ecosystem that provides comprehensive patient profiles to improve translational research and ultimately patient care. These goals are reflected in the CDSI values to:

- Establish automated flow of deidentified data from patient charts and clinical tests
- Prioritize ease of data access and use, e.g. through the cBioPortal for Cancer Genomics
- Enable the development of innovative AI/ML-based outcome models

cBioPortal and AACR Project GENIE

The cBioPortal for Cancer Genomics is an open source, interactive analysis and visualization tool designed by MSK scientists to make data from large-scale cancer genomics projects more interpretable and accessible. The cBioPortal has grown exponentially, becoming a multi-institutional partnership that now serves as a hub for tens of thousands of researchers each month to explore the connections between cancer-related genetic mutations and clinical outcomes.
In 2015, the American Association for Cancer Research (AACR) launched AACR Project GENIE, a larger-scale version of the cBioPortal that gathers data from 19 international cancer centers. MSK quickly became the database's largest contributor and remains so today.

Collaborations Across the Institution

Computational
Oncology

Functional Genomics
Initiative

Global Biomarker Development
Program

Robert and Kate Niehaus Center for Inherited Cancer
Genomics

Featured Publications

Genomic characterization of metastatic patterns from prospective clinical sequencing of 25,000 patients

The context-specific role of germline pathogenicity in tumorigenesis

Genetic Ancestry Correlates with Somatic Differences in a Real-World Clinical Cancer Sequencing Cohort

More publications

Milestones

2014-2016: Establishing infrastructure for collaborative science

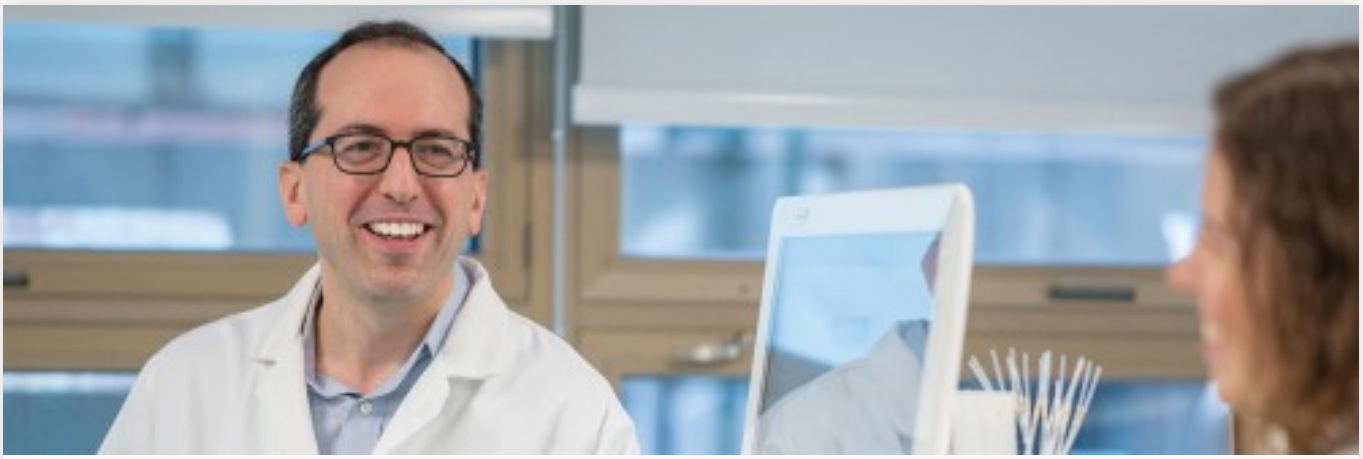
2017-2020: Innovation and rapid expansion of genomic technologies

2021-2024: Focus on data dissemination and accessibility

Featured News

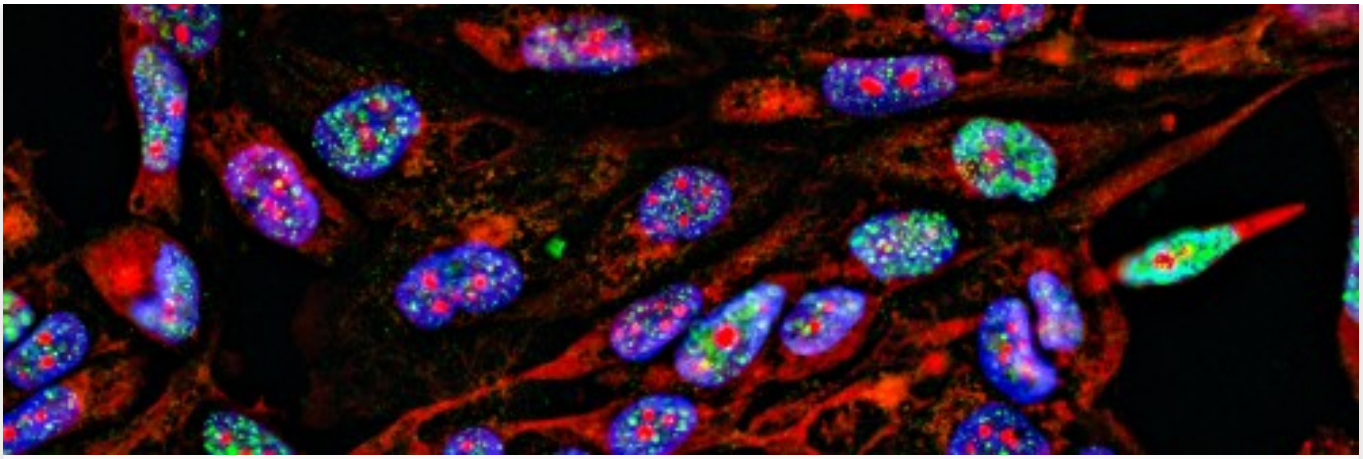
What Proportion of Cancer Patients May Benefit from Precision Oncology? More Than You Think!

What proportion of cancer patients are eligible to benefit from precision oncology? There is an ongoing debate on this issue, partly due to a lack of consensus on which gene mutations are clinically actionable.



Exposing a Cancer Cell’s Weakness

MSK has developed an arsenal of tests that are at the front lines of precision treatments. They target the structure of proteins that cause cancer, offering people new hope.



The Mystery of Metastasis: Can a Tumor's Genetic Mutations Predict Whether and Where Cancer Will Spread?

Data from 25,000 patients is helping scientists answer this and many other important questions.

How Do Inherited Gene Mutations Cause Cancer? A New Database Will Help Researchers Find Out

In a new paper, a collaborative team of MSK experts reports how a novel tool will help researchers learn more about the role of inherited hereditary mutations.

Leadership

Executive Committee

If you would like more information about the Marie-Josée and Henry R. Kravis Center for Molecular Oncology or support our research, please contact:

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