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Memorial Sloan Kettering
Cancer Center

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now a standard treatment approach around the world. Areas that our physicists continue to develop in collaboration with our physicians include image-guided radiation therapy (IGRT), advanced brachytherapy (implanted isotope) methods, quantitative imaging with positron emission tomography (PET) nuclear imaging, and a range of new applications for MRI.

Additional areas of collaborative focus for MSK and [Sloan Kettering Institute](#) partners include:

- Developing more-personalized predictors of cancer risk from images using advanced image processing, machine learning, statistical modeling techniques, and biomarkers

- Improving radiotherapy by using image guidance and adapting therapy based on the imaged tumor response

- Developing models to predict both risk of toxicity and the likelihood of tumor control, and using these to plan an optimal course of radiotherapy

- Developing new informatics tools and paradigms to more effectively organize, display, analyze, and understand information in radiology and radiation oncology applications

In the clinical setting, medical physicists and other physical scientists and engineers work closely with radiation oncologists, radiologists, and other physicians to plan and monitor treatments involving radiation, ultrasound, and lasers. Physicists assess the performance of medical imaging equipment and coordinate the use of nuclear medicine techniques.

Our department is also responsible for the safe use of radiation by our patients and staff, the calibration of radiation-producing equipment and radioactive sources, and the design of special devices for use by other clinical departments. Biomedical engineers help to maintain equipment and ensure the safe use of electrical equipment in patient areas. They also participate in developing special devices, such as robotic equipment, for use in patients.

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