

Natalia Lutsik

Postdoctoral Associate

Field of Study

Radiation Oncology & MRI Development



What impact do you want your research to have?

I want my research to have an impact on increasing the results of radiation therapy treatment for patients with glioblastoma. Our research focuses on improving and applying MRI on the world's first combination MRI-linear accelerator. We were the first to demonstrate daily MRI across the six weeks of chemoradiotherapy for glioblastoma patients. Our goal is to identify imaging biomarkers that will predict eventual response and intensify therapy for poorly responding diseases. As part of this, we hoped to analyze changes in diffusion-weighted MRI such as the apparent diffusion coefficient across the course of radiotherapy, and correlate those changes with outcome.

What inspired you to pursue your area of research?

One of the main factors which pursued me to choose the MRI as a field of my research was the ability to "look inside" the disease. For me, it was always extremely interesting to see all the changes inside the body which cause the disease and to monitor how the tumor changes during the treatment. Also, to have an opportunity to see the dynamic of the tumor grow not only visually, but also quantitatively, using different imaging techniques and biomarkers, inspired me to learn more about it. The knowledge that the results of your work can help people with brain cancer motivates you a lot.

What is most exciting about your research?

During the postprocessing of the images of patients, which we acquired after every fraction of the radiotherapy course, you never know what the result of your measurements will be. When you realize that the values extracted from the MRI images are in perfect accordance with the clinical results, it brings you a deep sense of contentment.

What makes your research unique?

The machine that we use in our work is the world's first combination of the MRI scanner and the linear accelerator. This scanner lets us acquire research MRI images daily for assessing the response to treatment. We monitor patients with glioblastoma after every fraction of radiotherapy and analyze thousands of slices of images to characterize the changes of the tumor, which helps to intensify the therapy for poorly responding disease.

What are your plans after finishing your postdoc at the University?

After finishing my postdoctoral fellowship, I want to continue my career in academia with the goal of eventually launching my own research laboratory and mentoring students.

