

Short summary BBTS - Jochen Belmans

My PhD project fits into the tumor vaccination project of our research group. In this project an immune therapy is created to treat patients with glioblastoma multiforme, an aggressive brain tumor. Therefore specific immune cells, dendritic cells, are grown outside the patient and these cells are loaded with the lysate of the patients own tumor. Achieved preclinical and clinical results are very promising with an increase in median survival and the generation of long term survivors. However, the use of these cell cultures outside the patient is labour intensive. Nanoparticles, small particles called this way because of their size range within the nanometer scale (1×10^{-9} meter), can possibly help to circumvent the problem with cell cultures outside the patient. Nanoparticles can be taken up by dendritic cells specifically and besides that, lysate can be bound to nanoparticles. If you combine these two features of nanoparticles it is clear that if injected into the patient, nanoparticles can serve as a carrier for the lysate bound on these particles to the dendritic cells inside the patient. This way skipping the need for cell cultures outside the patient. The ultimate goal of the project is to implement these small particles in the present immune therapy. But of course these experiments can't be performed immediately in humans. First experiments will be performed in cell cultures and later on in a mouse model for glioblastoma, the GL261 malignant glioma model. The main objective of this project is to create a preclinical evidence to use NPs conjugated with tumor lysate as a new vaccination strategy.