

**Title of the project:** Experimental treatment of glioblastoma multiforme by thermoablation using superparamagnetic nanoparticles carrying doxorubicin

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**Principal Investigator:** P. Krůpa

**Co-investigators:** P. Jendelová, S. Řehák, D. Mareková

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**Summary of 2017 results**

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**Background**

In our project we test new prototype of nanoparticles (gammaFe<sub>2</sub>O<sub>3</sub>, maghemite). which will be conjugated with doxorubicin. As a model of pathologic tissue we use C6 line of the rat glioblastoma and line from resected tissue of the patients. So far we tested proliferation of the cells, toxicity of the nanoparticles and temperature after exposing to the magnetic field. This year nanoparticles will be injected intravenously or directly into the lesion in the brain by stereo taxis. Imaging of their accumulation, active targeting, their warming and destruction of the tissue by thermoablation will be provided by a magnetic resonance device.

**Methods**

Viability of the cells was measured manually and with flow cytometry. Monitoring of the grow potential after exposing to nanoparticles and heating in the magnetic field was done totally 96 hours after exposure by real-time scanner (xCELLigence).

**Results**

During testing we proved differencies in cell viability as well as rising of the temperature when exposing cells with nanoparticles to magnetic field. Optimalization and analysing of the method will be held in the next time period.

**Conclusion**

Optimalization of the in vitro processes is necessary for continuing of the experiment into the phase in vivo.

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