

# Spheroids for the study of nanoparticles as contrast agents for $\mu$ CT

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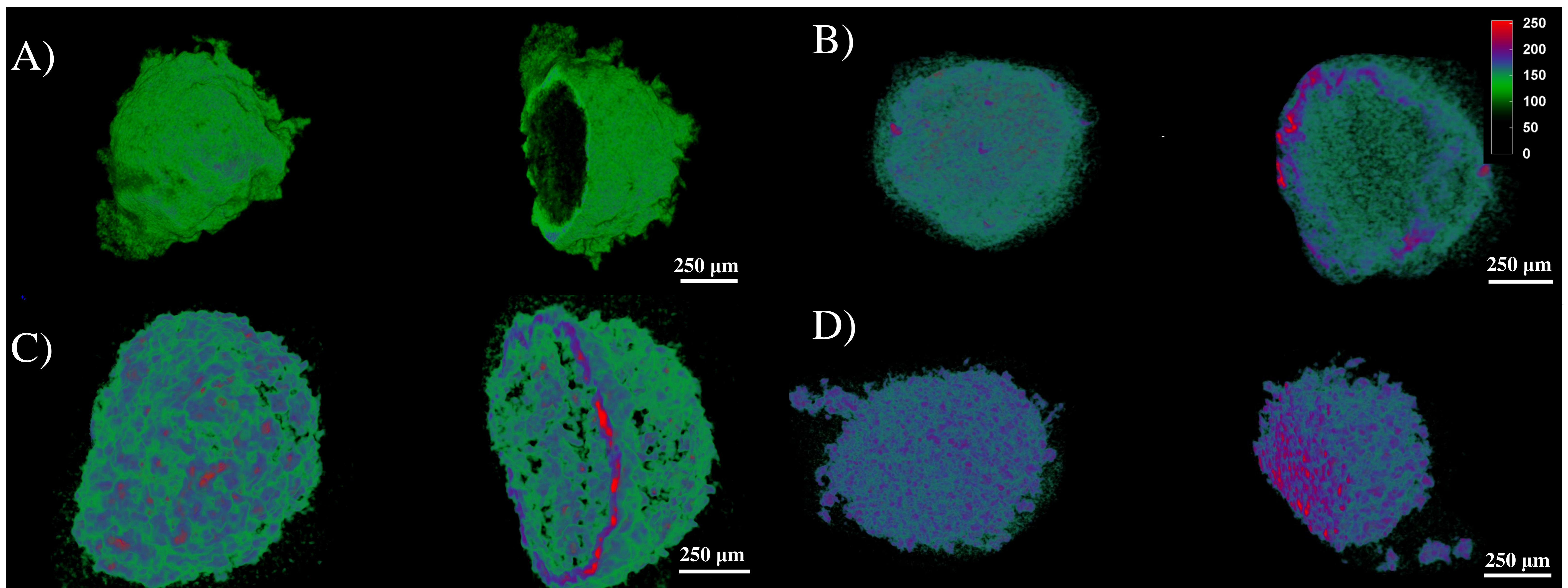
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## Introduction

3D cell cultures (spheroids) are intended to imitate the properties of the tumor tissue. In our research spheroid model was used to study the uptake of different types of contrast agents: gold nanoparticles (AuNPs), iron (III) oxide nanoparticles (IONPs), and Lugols solution. These agents were compared using the micro-computed tomography ( $\mu$ CT) technique.

## Results

Reconstructed images of spheroids stained with different contrast agents. (A) Spheroid stained with 30nm IONPs for 96h, with a concentration of 1mg/ml. (B) Spheroid stained with 80 nm gold NPs for 24h with a concentration of 2.5 $\mu$ g/ml. Spheroid stained with 80 nm gold NPs for 24h with a concentration of 5 $\mu$ g/ml. (D) Spheroid stained with Lugol's solution for 24 h, after incubation performed in (A).

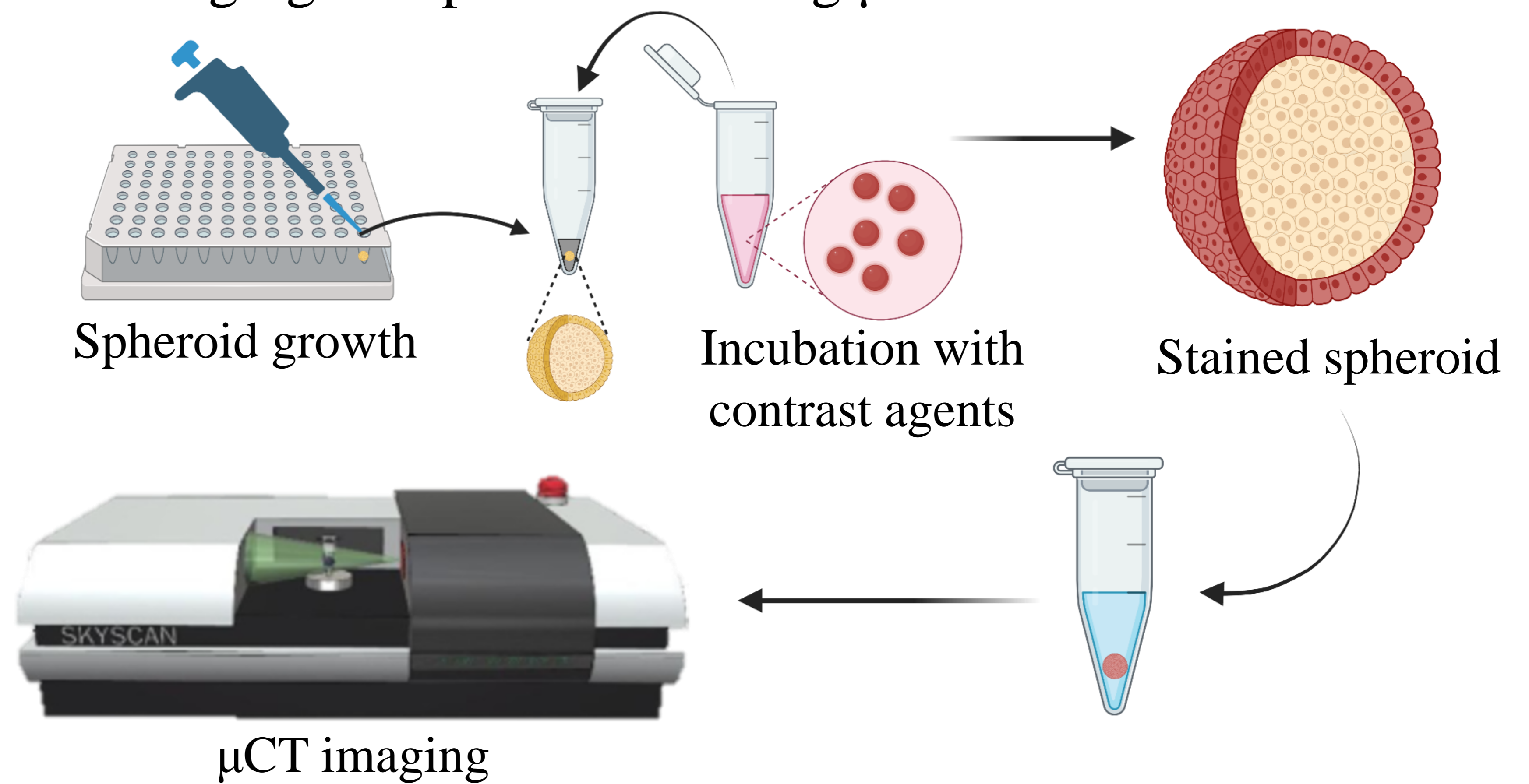


## Conclusions

The results show limitations of the use of IONPs as contrast agents (high concentrations and long incubation). AuNPs are very promising contrast agents (short times of incubation and low concentrations needed). Additionally, Lugol's solution was used to compare it with NPs uptake and contrasting abilities.

## Methods

Spheroids were created using metastatic melanoma cell line WM266-4 and were incubated with AuNPs (24h), IONPs (96h), Lugols solution (24h). After the incubation imaging was performed using  $\mu$ CT.



## Acknowledgements

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