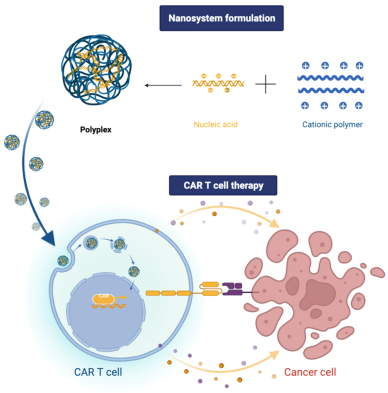
Synthesis and characterization of polymeric nanoparticles for T cell-based cancer immunotherapy

Inês S. Pinto, **MSc student,** inespinto@cnc.uc.pt
Rosemeyre A. Cordeiro, Henrique Faneca

Introduction

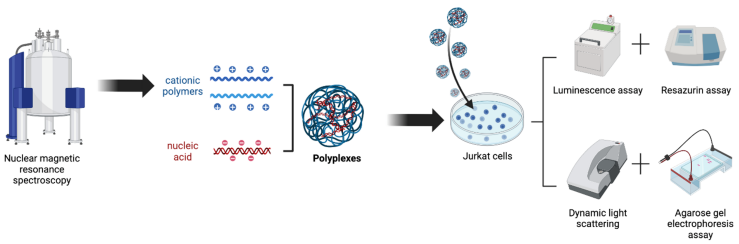
Cancer is one of main causes of death worldwide, showing that advanced and more effective therapies, like chimeric antigen receptor (CAR) T-cell-based immunotherapies, are urgently required. This treatment genetically modifies patient T-cells to express a specific receptor that recognizes and attacks tumour cells[1]. It has been done through viral vectors, which are associated with safety concerns, high cost and production challenges, and more recently also through electroporation, which can be extremely cytotoxic[2,3]. Nanosystems could overcome these problems, resulting in a safe and cost-effective platform[4].



Objective

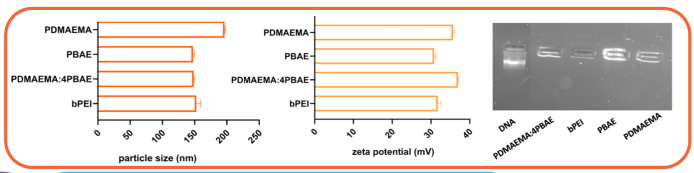
Development and characterization of polymeric nanosystems for T cell-based cancer immunotherapy.

Methods

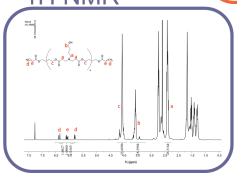


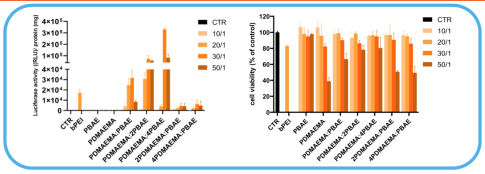
Results

Physicochemical properties



1H NMR





Biological activity and cell viability

Discussion/Conclusion

The PDMAEMA:4PBAE formulation exhibited:

- High transfection activity with reduced toxicity compared to the gold standard.
- Physicochemical properties suitable as gene delivery platform;

With their continuous optimization, these nanocarriers may have a strong potential for future clinical applications, improving the current T cell-based cancer treatments.

References

Audio

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