

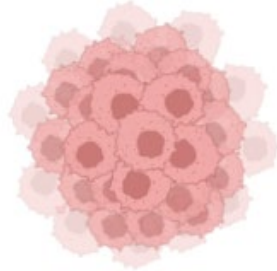
Sequential delivery of macrophage activating nanoparticles and checkpoint inhibitors improve melanoma immunotherapy in mice

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A Promising Dual-Targeting Strategy



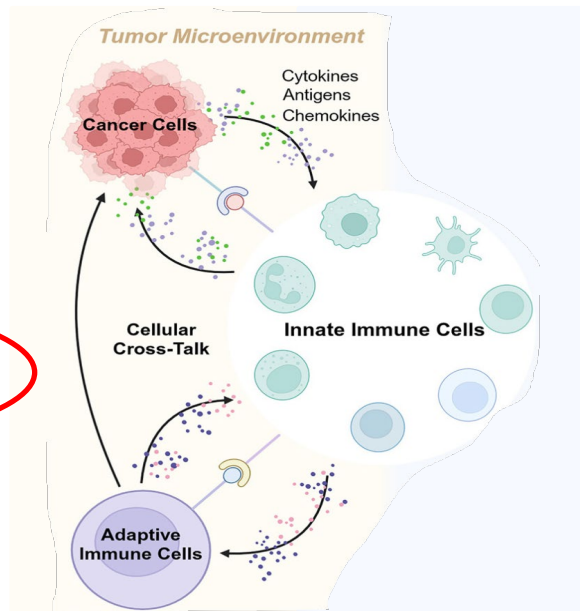
Tumor

A Promising Dual-Targeting Strategy

Activating Tumor Associated Macrophages (TAM)

Activate antigen presentation
Modulate tumor microenvironment

Succinate based Nanoparticles



Unleashing Adaptive Immune Cells

Block immune checkpoints,
Enhance T cell function

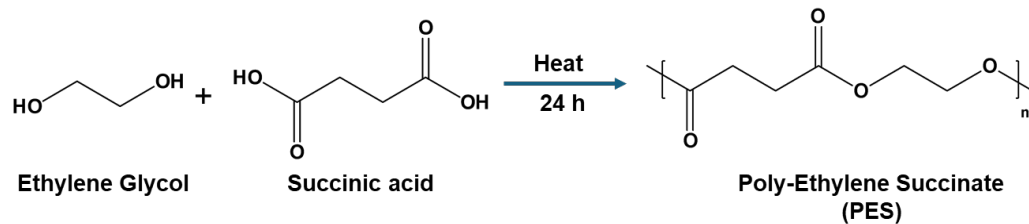
Anti-PD1 Antibody

Succinate in the tumor microenvironment affects tumor growth and modulates tumor associated macrophages

Sahil Inamdar^a, Abhirami P. Suresh^b, Joslyn L. Mangal^b, Nathan D. Ng^c, Alison Sundem^a, Hoda Shokrollahzadeh Behbahani^a, Thomas E. Rubino Jr.^{d,e}, Jordan R. Yaron^b, Taravat Khodaei^a, Matthew Green^{a,h}, Marion Curtis^{d,e,f}, Abhinav P. Acharya^{a,b,g,h,i,j}

<https://www.cell.com/science/fulltext/S2589-0042%2824%2901975-8>

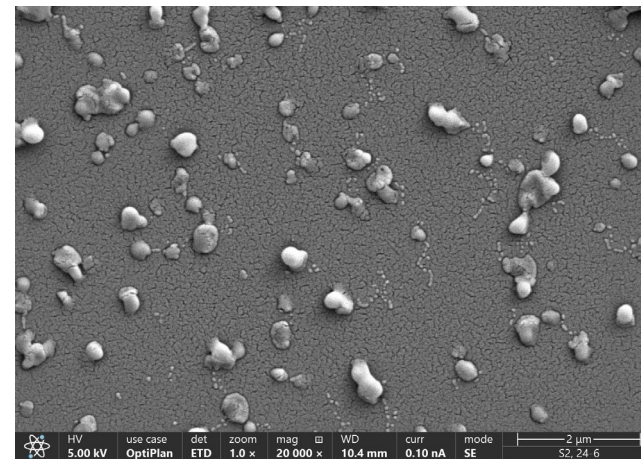
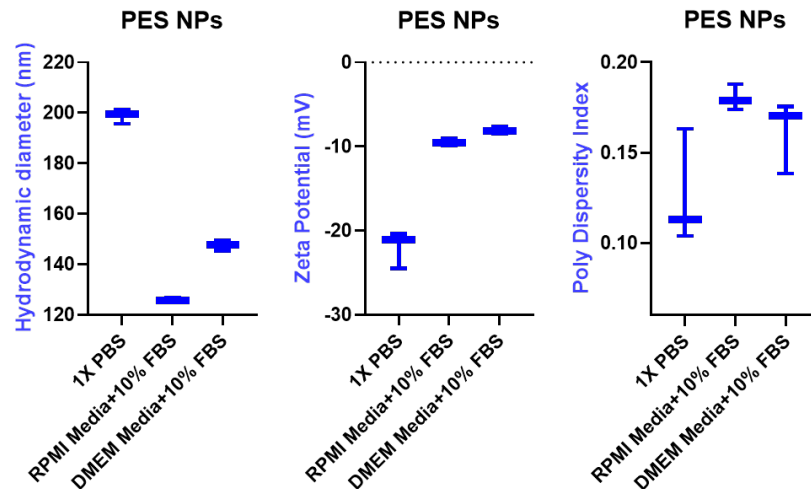
PES polymer and nanoparticles (NPs) preparation and characterization



DMSO
+ Aqueous solvent

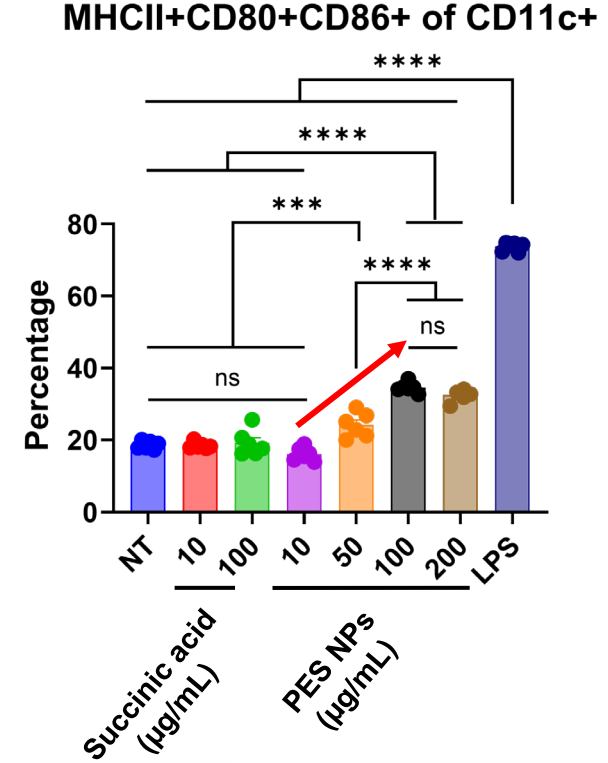
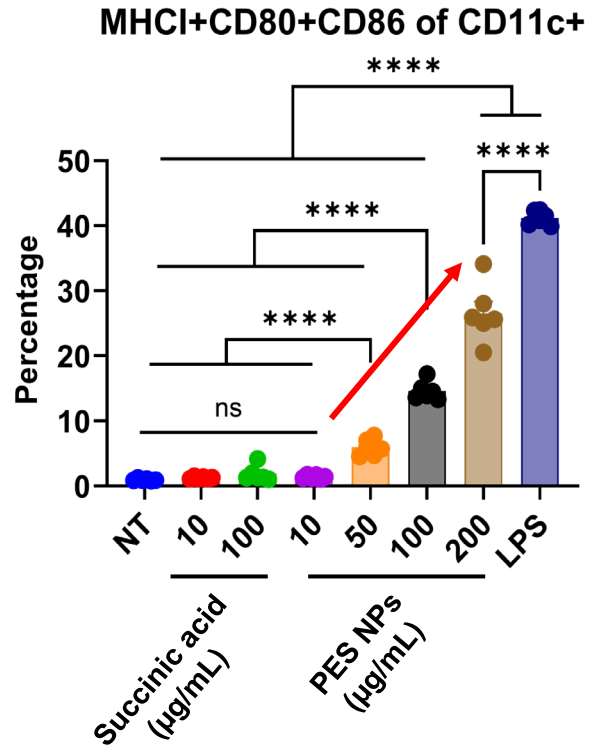
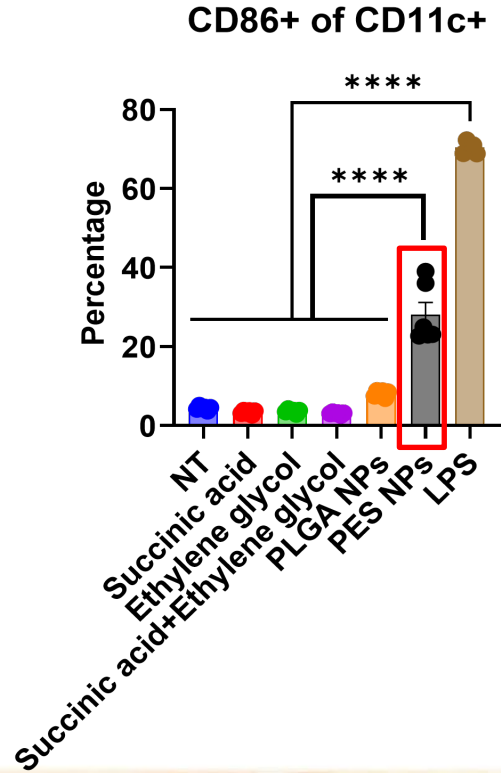


PES NPs



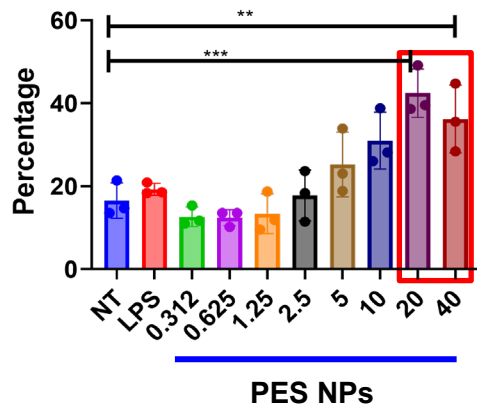
SEM

PES NPs activates bone marrow derived Dendritic Cells (DCs)

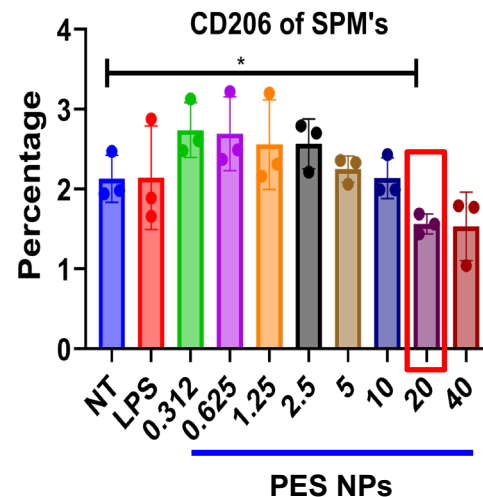
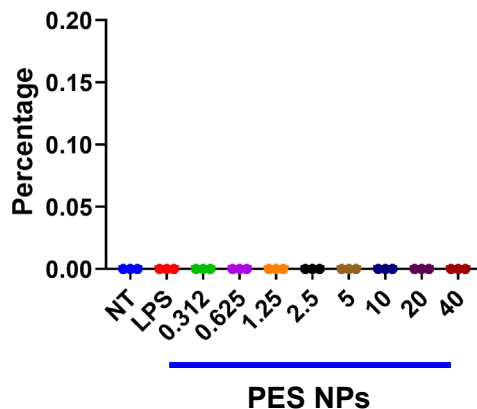


PES NPs enhances the small peritoneal macrophages (SPMs): M1 like macrophages

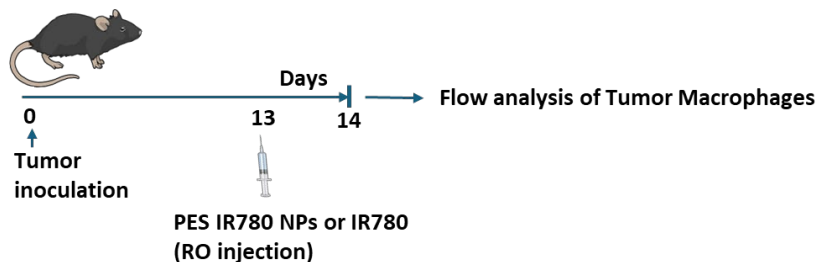
LPM (M2 like macrophages) dead cells



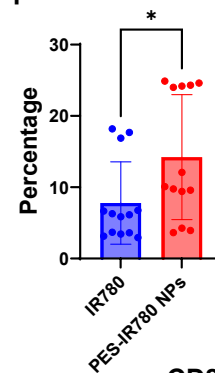
SPM (M1 like macrophages) dead cells



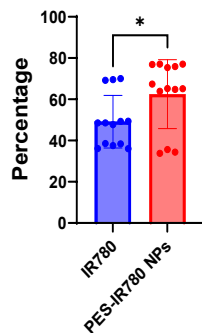
PES NPs enhances the activation of macrophages in the tumor



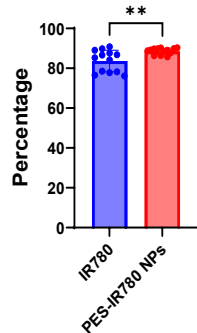
Uptake in Tumor CD11b+



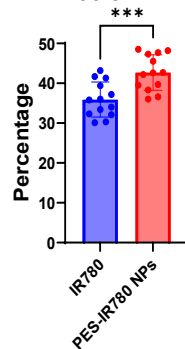
CD80 of CD11b+



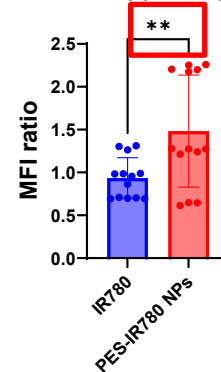
CD86 of CD11b+



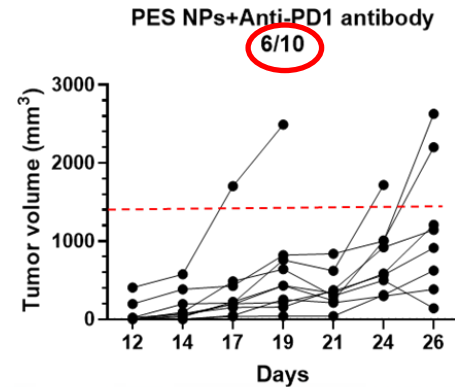
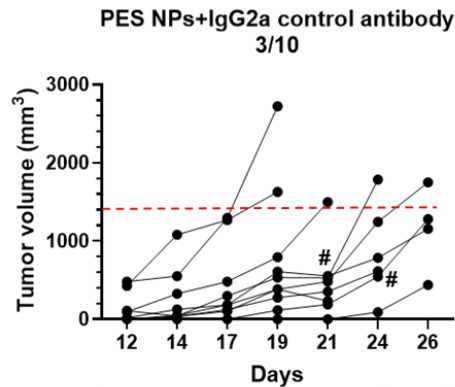
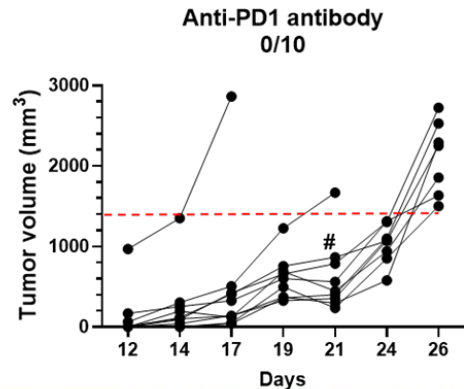
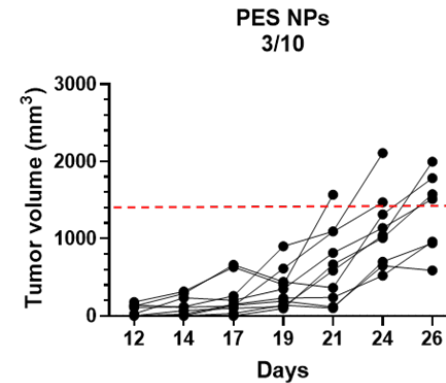
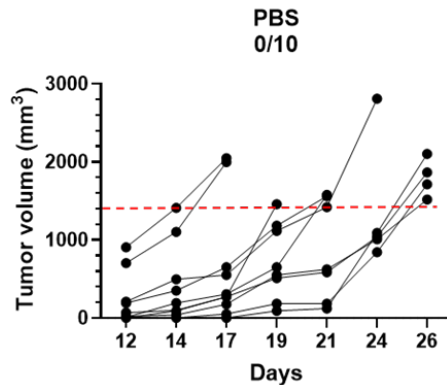
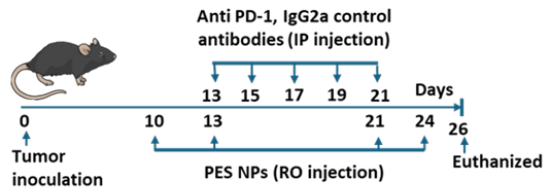
CD206 of CD11b+



CD80/CD206

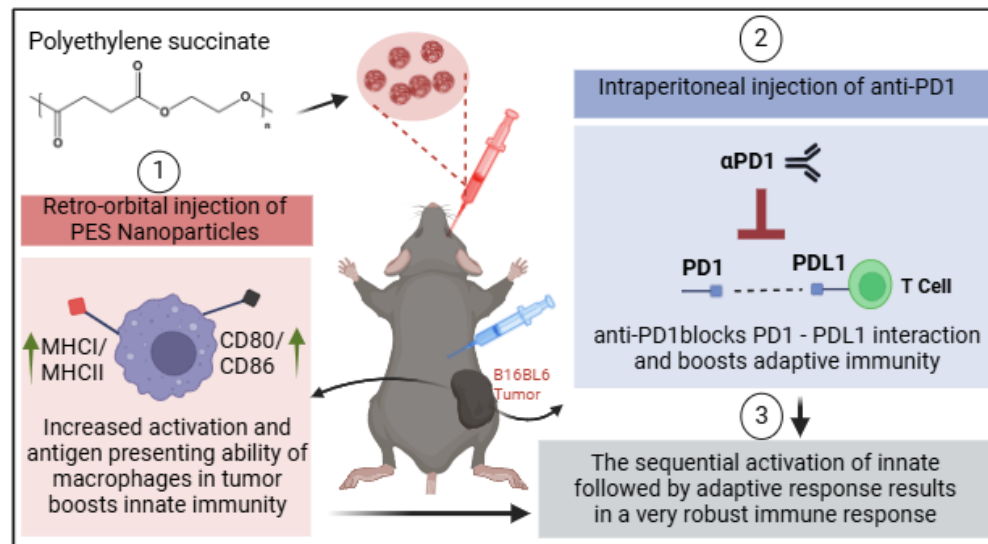


PES NPs + Anti-PD1 therapy reduces the tumor burden



Survival rate= Live mice/Total mice

Summary & Conclusions



- PES NPs are potent Immunostimulants
- Effective tumor associated macrophage uptake activation
- This combinatorial approach reducing the tumor burden and improves survival compared to monotherapies

Acknowledgements

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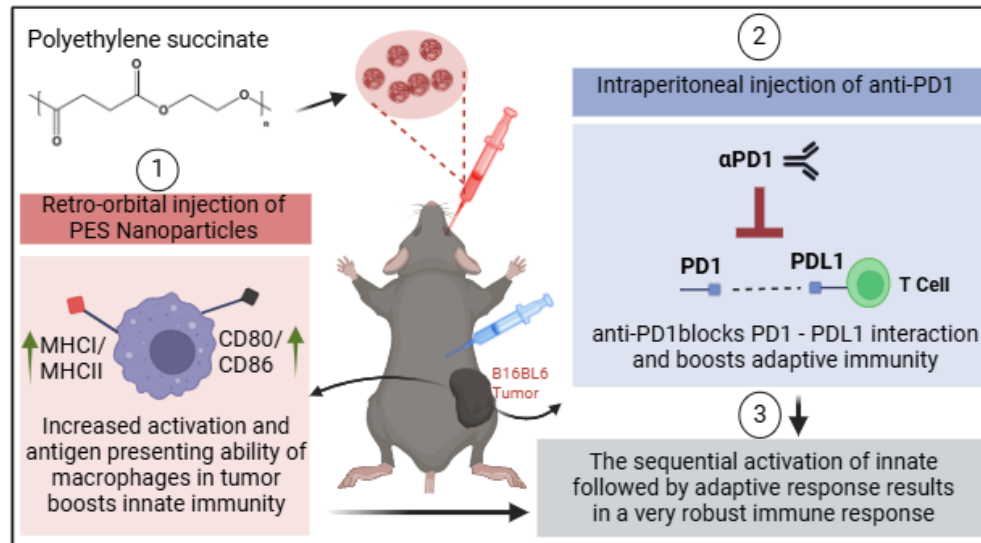


Thank you for your
attention!

Acharya Lab



Summary & Conclusions



1 PES NPs are potent Immunostimulants

2 Effective tumor accumulation and macrophage activating

3 This combinatorial approach significantly reduces tumor burden and improves survival compared to monotherapies