Induction of Long-Term Immunity Against Respiratory Syncytial Virus Glycoprotein by An Osmotic Polymeric Nanocarrier

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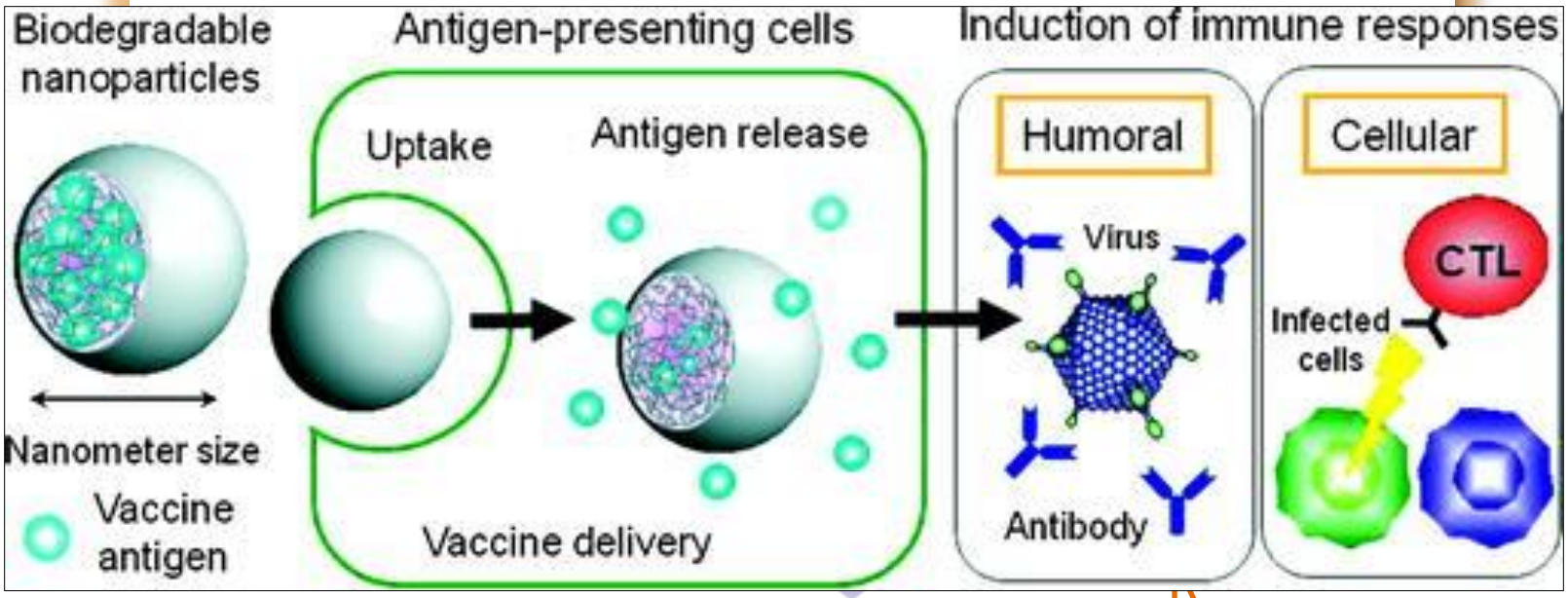
Vaccine adjuvant & Delivery system

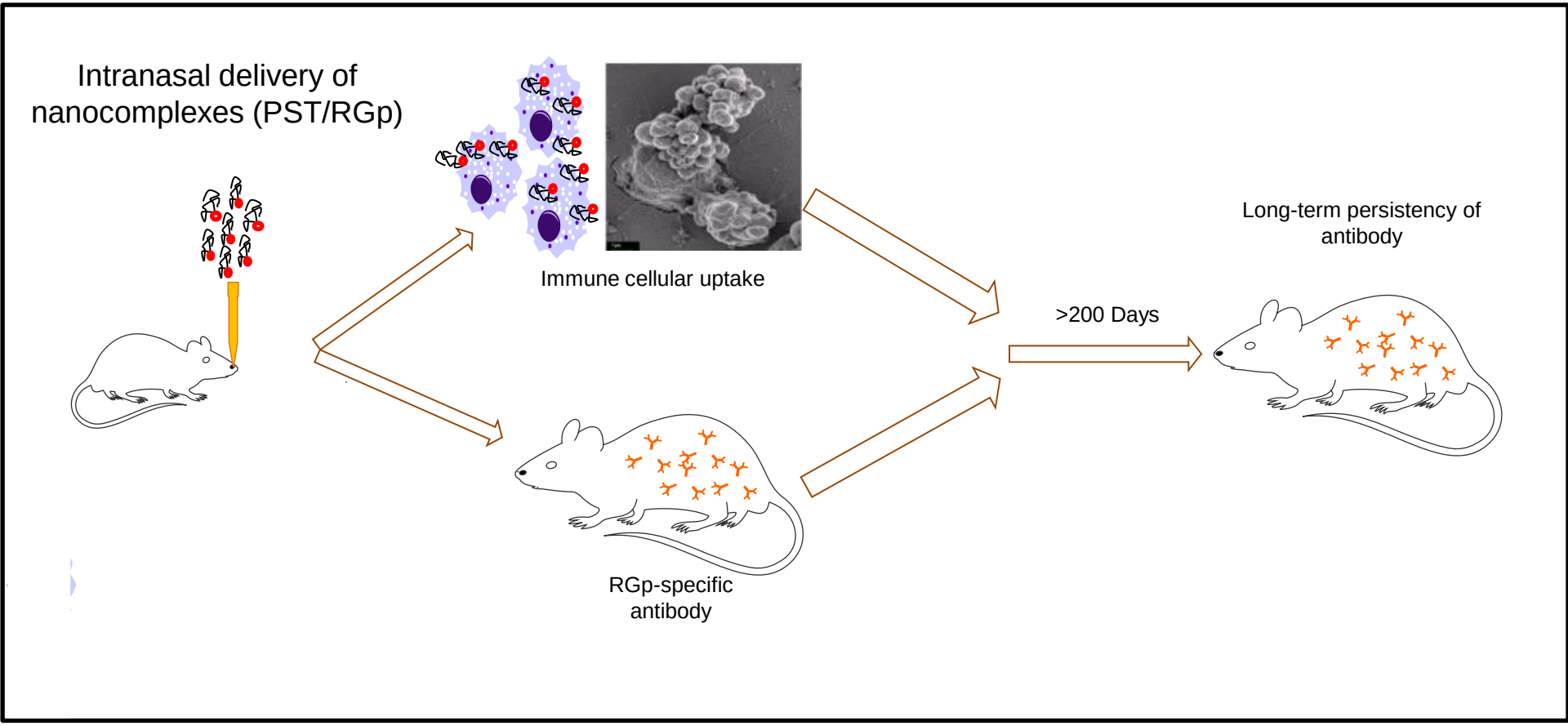
Advanced approaches
Nanoparticles – novel concept



1. Physical chemistry
2. Safety
3. Cellular Uptake and release
4. Antibody response >> Long term persistency

PST

Hypothesis



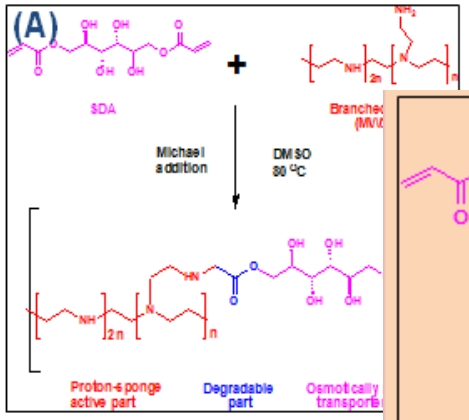
PST: Poly Sorbitol Transporter

RGp: Respiratory Syncytial Virus Glycoprotein

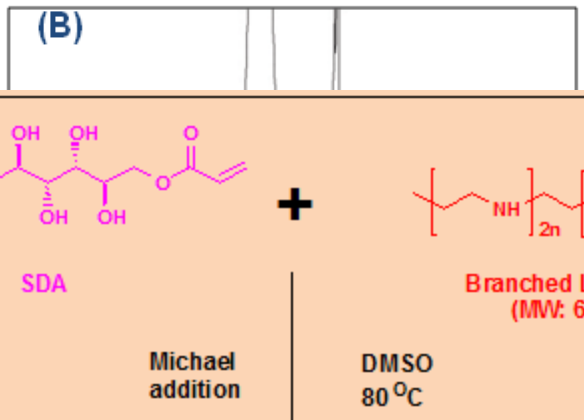
Phagocytic cells

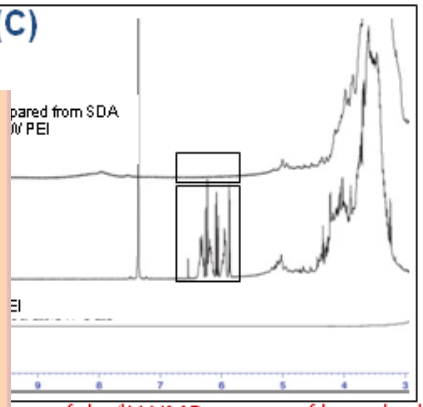
RGp-specific antibody

PST as novel and safe nano-adjuvant



Reaction scheme of PST base
SDA and BPEI600 (4:1)

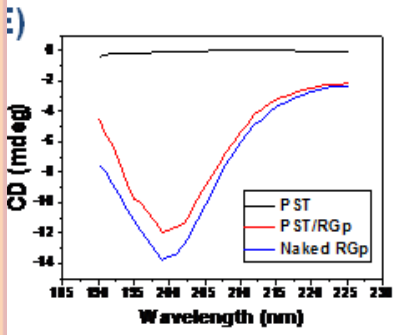




son of the ^{1}H NMR spectra of branched
MW PEI, SDA, & synthesized PST

(D)

Sample	Molecular weight (Da) of	
	Sorbitol diacrylate (SDA)	Poly-ethylenimi (PEI)
Polysorbitol transporter	290.27	600



Structural integrity (protein)

Characterization of synthesized PST based on SDA and branched LMW PEI

PST synthesized successfully as expected to have four times higher amount of SDA than PEI and in complexation with RGp did not affect structural integrity of the target protein

PST as novel and safe nano-adjuvant

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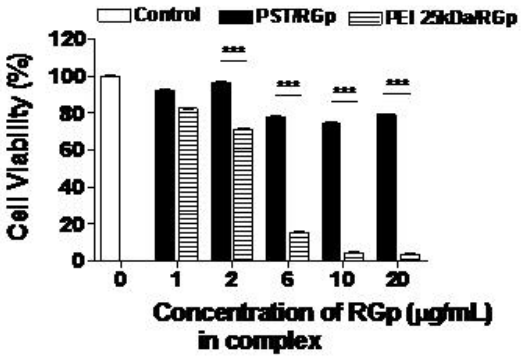
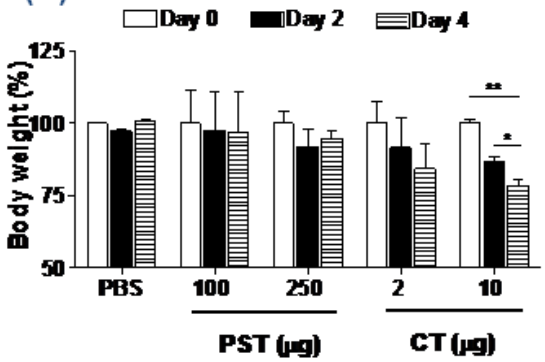
(A)



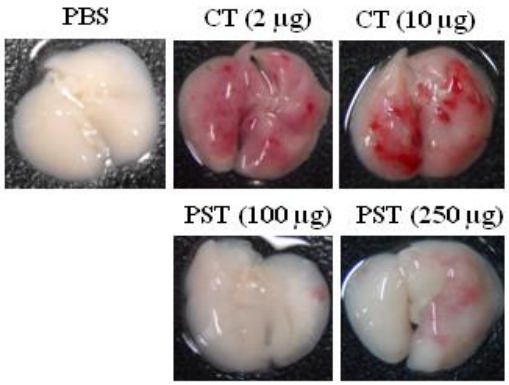
Toxicity of PST/RGp complex in RAW264.7 cells

(B)



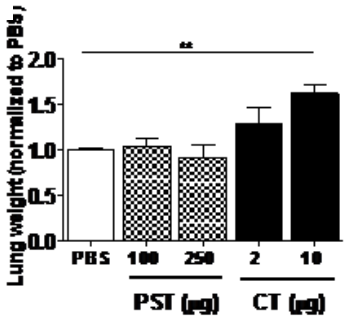
Body weight change

(C)



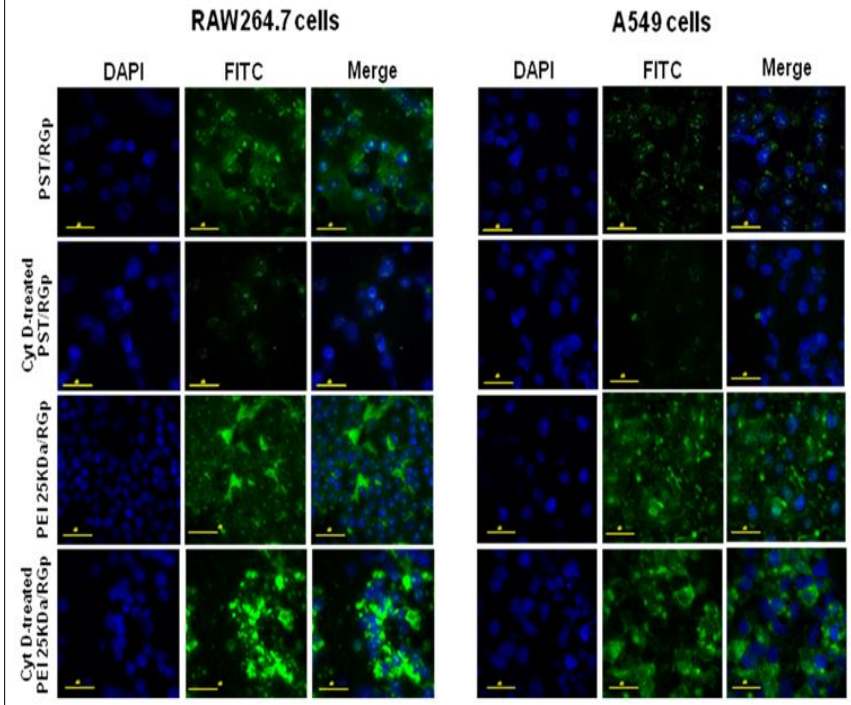
Lung pathology (at 4 DPT)

(D)



Lung weight (at 4 DPT)

PST as novel and safe nano-adjuvant



PST has the selectivity towards phagocytic cells and the uptake mechanism is also specific (*i.e.*, phagocytosis) whereas PEI-mediated uptake is not phagocytosis and targeting the cells non-selectively.

PST as novel and safe nano-adjuvant

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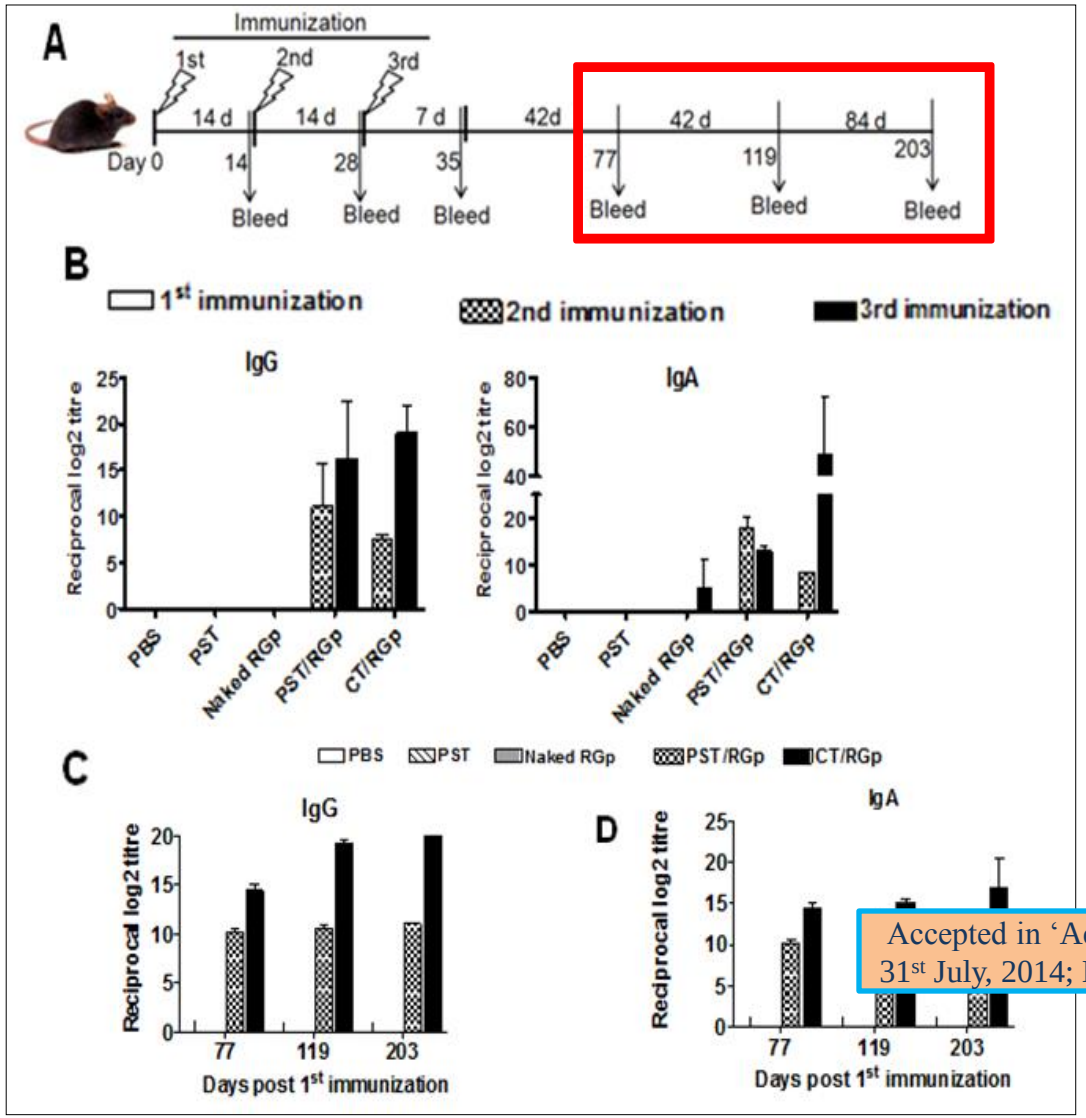
Polysorbitol transporter (PST)

RSV G protein (RGp)



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Thank you