Supporting Information

Cationic Amino Acid-Engineered Peptide Hydrogels for Sustained and Potent Antigen Delivery Enabling Single-Administration Vaccination

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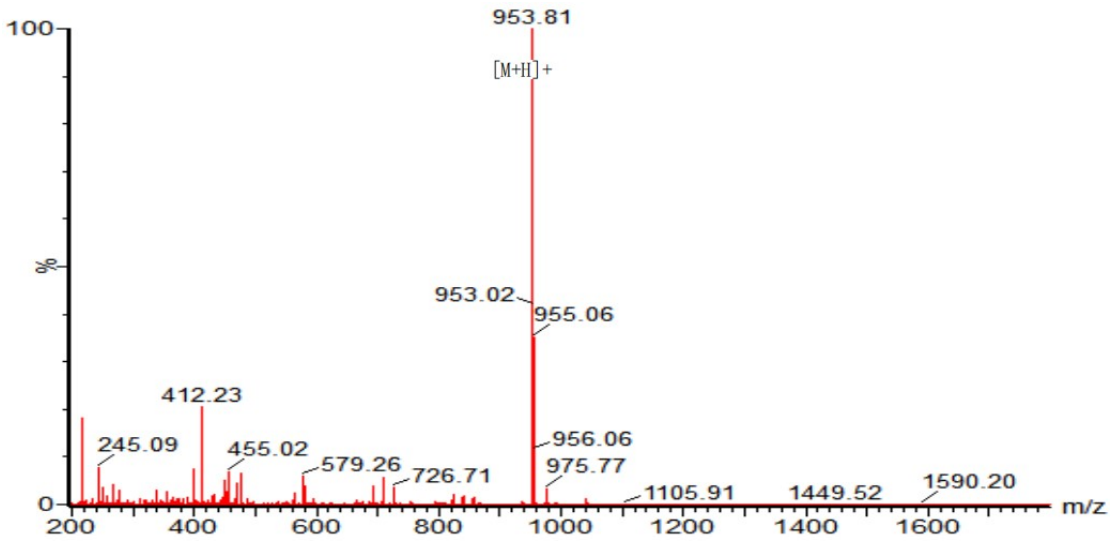


Fig. S1**.** MS spectrum of J-1. The dominant peak shown in the spectrum corresponds to the single charged ion peak of J-1.

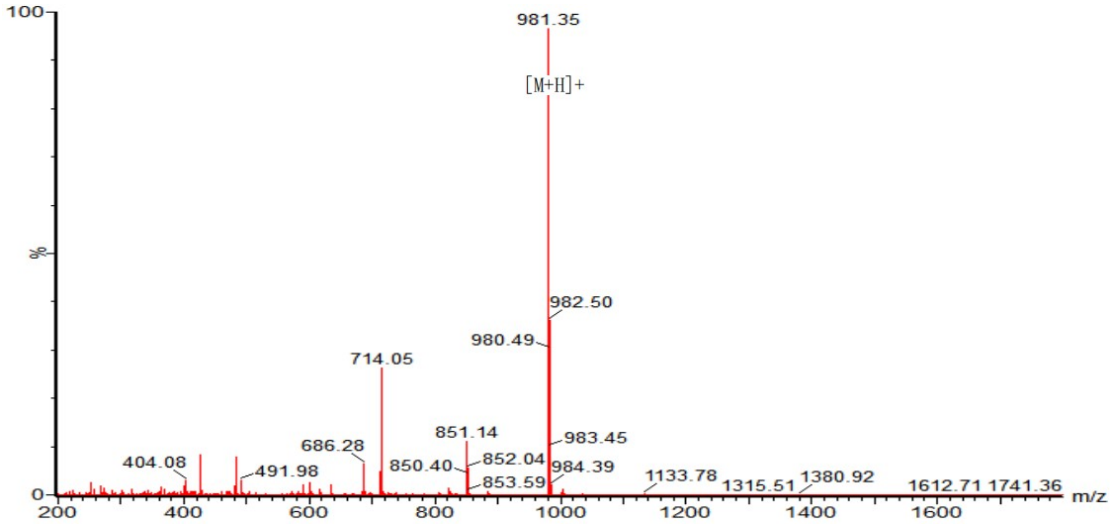


Fig. S2. MS spectrum of J-2. The dominant peak shown in the spectrum corresponds to the single charged ion peak of J-2.

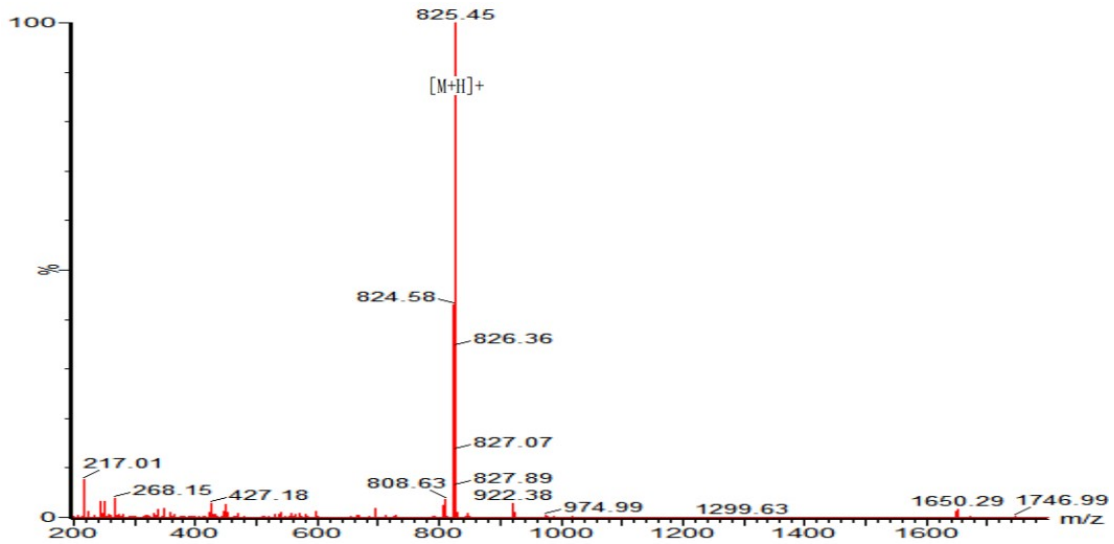
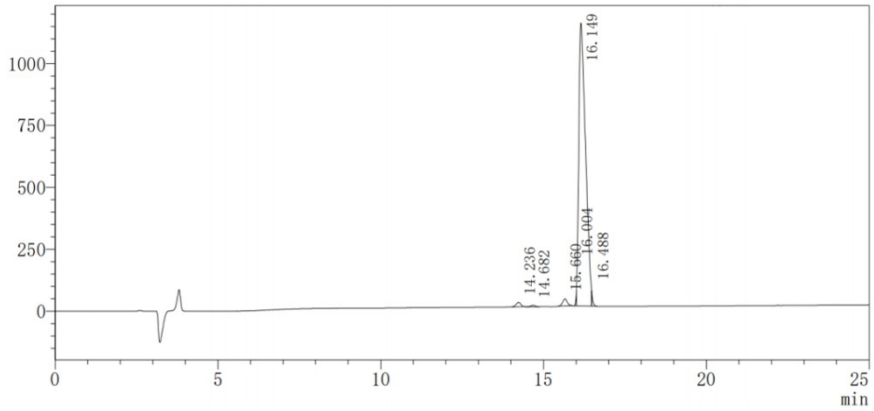
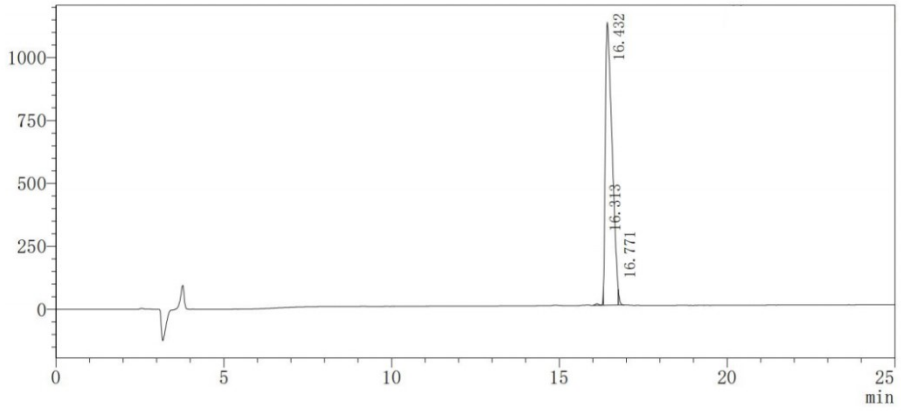


Fig. S3. MS spectrum of J-3. The dominant peak shown in the spectrum corresponds to the single charged ion peak of J-3.



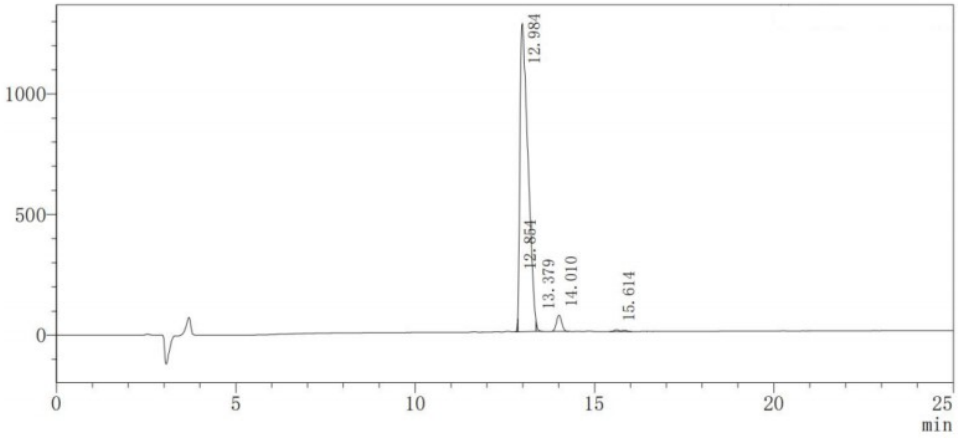
	Retention time	Area	% Area	Peak height
1	14.236	180208	1.045	18145
2	14.682	53665	0.311	5845
3	15.660	282927	1.641	28669
4	16.004	78092	0.453	39686
5	16.149	16532052	95.884	1141474
6	16.488	114832	0.666	51377

Fig. S4. HPLC spectrum of J-1. The percentage of the area of the main peak of J-1 at 16.149 min accounts for 95.884 % of the total peak area, which represents the purity of J-1.



	Retention time	Area	% Area	Peak height
1	16.313	123354	0.769	40934
2	16.432	15808465	98.515	1121250
3	16.771	114919	0.716	51318

Fig. S5. HPLC spectrum of J-2. The percentage of the area of the main peak of J-2 at 16.432 min accounts for 98.515 % of the total peak area, which represents the purity of J-2.



	Retention time	Area	% Area	Peak height
1	12.854	57572	0.277	29886
2	12.984	19841874	95.497	1276474
3	13.379	86384	0.416	37434
4	14.010	682248	3.284	67234
5	15.614	109391	0.526	6929

Fig. S6. HPLC spectrum of J-3. The percentage of the area of the main peak of J-3 at 12.984 min accounts for 95.497 % of the total peak area, which represents the purity of J-3.

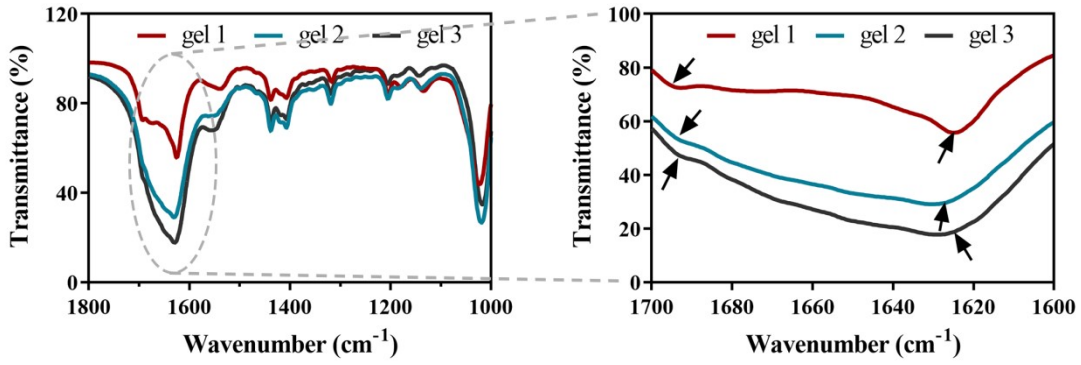


Fig. S7. The FTIR spectra of gel 1, gel 2, and gel 3.

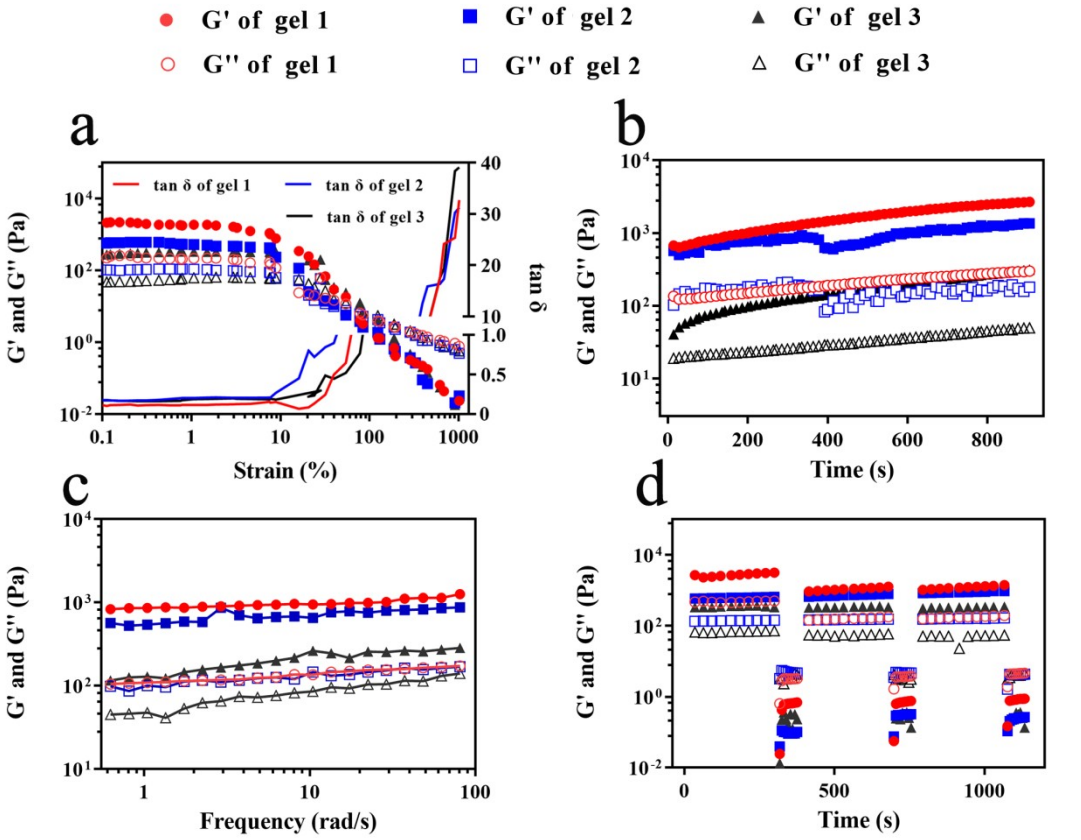


Fig. S8. Rheological characterization of gel 1, gel 2, and gel 3. (a) Strain sweep from 0.1% to 1000% at 1 Hz. (b) Time sweep at 1% strain and 1 Hz for 15 min. (c) Frequency sweep from 0.1 to 100 rad/s at 1% strain. (d) Step-strain test: alternating 1% strain (300 s) and 100% strain (60 s), repeated for three cycles.

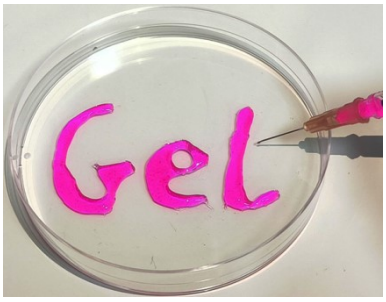


Fig. S9. Photograph of "Gel" extruded Gel 1 through syringe needle.

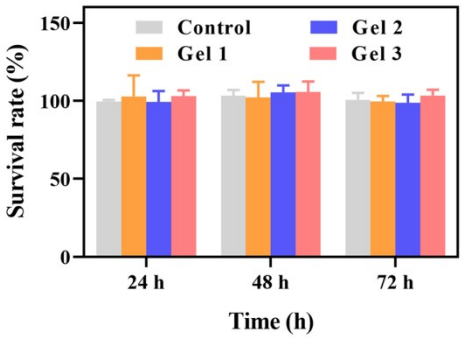


Fig. S10. Cell viability of Marc 145 cells after co-incubation with Gel 1, Gel 2, or Gel 3, determined by MTS assay; tissue culture plate (TCP) served as the control.

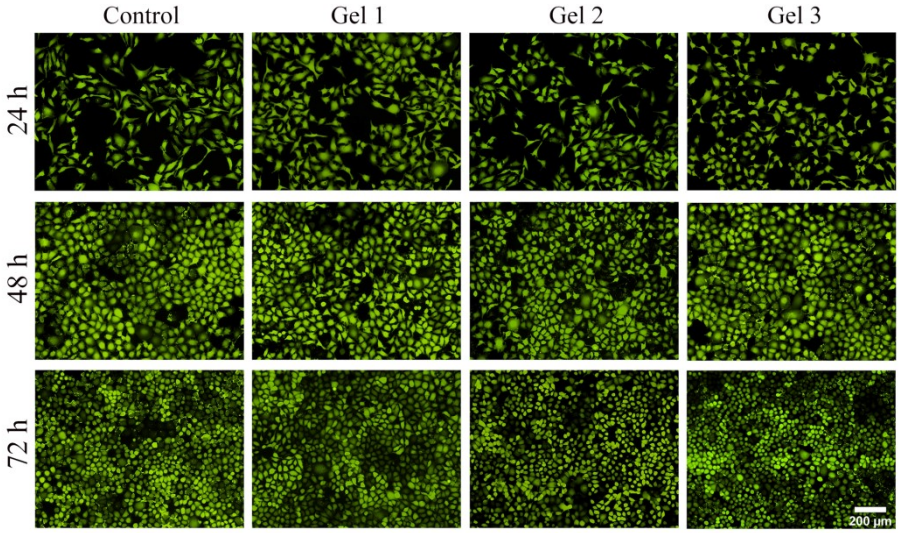


Fig. S11. Live/dead staining of Marc 145 cells after co-incubation with Gel 1, Gel 2, or Gel 3; TCP served as the control. Scale bar, 200 μm.

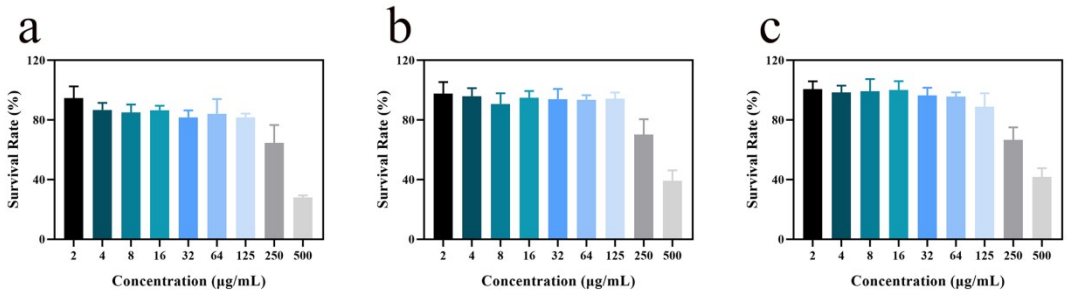


Fig. S12. The survival rate of Marc 145 cells after incubation with J-1 (a), J-2 (b), and J-3 (c) at different concentration for 24 h, TCP was used as control.

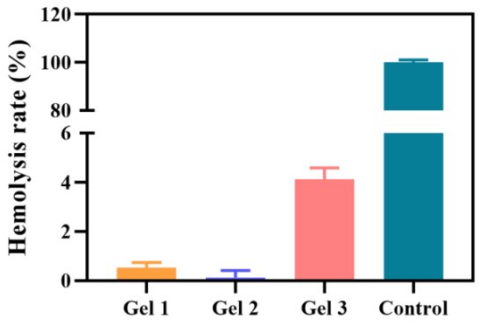


Fig. S13. Hemolysis rate of mouse red blood cells co-incubated with Gel 1, Gel 2, or Gel 3; 1% Triton X-100 served as control.

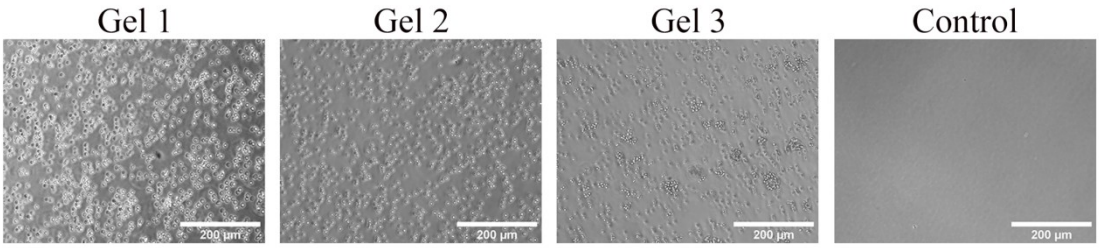


Fig. S14. Erythrocyte morphology after treatment with Gel 1, Gel 2, and Gel 3, 1% Triton X-100 was used as control.

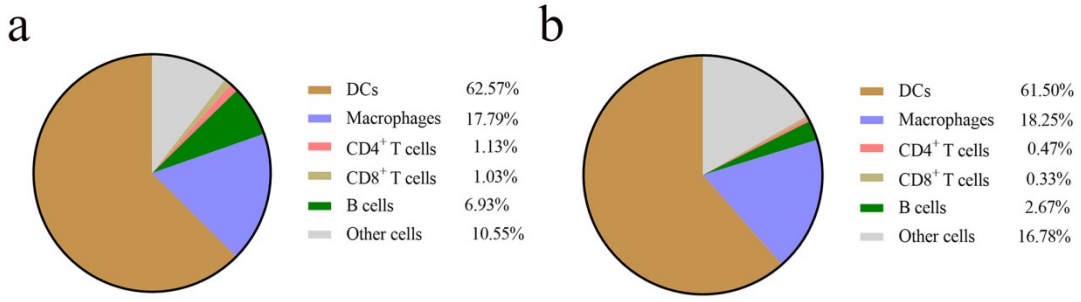


Fig. S15. (a-b) Frequency of DCs, macrophages, $CD4^+$ T cells, $CD8^+$ T cells, B cells, and other

cells from retrieved nodules of Gel 2 (a) and Gel 3 (b).