



Supplementary Materials

Immunomodulatory Function of Polyvinylpyrrolidone (PVP)-Functionalized Gold Nanoparticles in *Vibrio*-Stimulated Sea Urchin Immune Cells

Andi Alijagic ¹, Angela Bonura ¹, Francesco Barbero ², Victor F. Puentes ^{2,3,4}, Francesco Gervasi ⁵
and Annalisa Pinsino ^{1,*}

¹ Consiglio Nazionale delle Ricerche, Istituto per la Ricerca e l'Innovazione Biomedica (IRIB), 90146 Palermo, Italy; andialijagic@gmail.com (A.A.); angela.bonura@irib.cnr.it (A.B.)

² Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Campus UAB, Bellaterra, 08193 Barcelona, Spain; fra.barbero@gmail.com (F.B.); victor.puentes.icn@gmail.com (V.F.P.)

³ Institució Catalana de Recerca i Estudis Avançats (ICREA), 08010 Barcelona, Spain

⁴ Vall d'Hebron Institut de Recerca (VHIR), 08035 Barcelona, Spain

⁵ Specialistic Oncology Laboratory Unit, ARNAS Hospitals Civico Di Cristina e Benfratelli, 90127 Palermo, Italy; francesco.gervasi@arnascivico.it

* Correspondence: annalisa.pinsino@irib.cnr.it

Table S1. Results from two-parameter flow cytometric analysis of immune cells of four sea urchin *Paracentrotus lividus*.

Donors	Subset of cells	Control	PVP-AuNPs	<i>Vibrio</i>	PVP-AuNPs plus <i>Vibrio</i>
A	Group 1	74.1	72.9	65.4	69.2
B		68.3	69.1	71.3	67.5
C		53	53.6	52.5	65.1
D		66.4	68.8	72.2	72.3
	Mean \pm SD	65.5 \pm 8.9	66.1 \pm 8.5	65.4 \pm 9.1	68.5 \pm 3.0
A	Group 2	9.9	7.71	9.91	9.79
B		5.57	5.81	8.29	11.8
C		6.25	6.45	12.3	8.48
D		8.45	7.23	7.10	6.79
	Mean \pm SD	7.5 \pm 2.0	6.8 \pm 0.8	9.4 \pm 2.3	9.2 \pm 2.1
A	Group 3	2.3	4.79	1.44	2.91
B		12.4	12.7	9.65	11.6
C		32	32.6	28.8	30
D		14.9	14.8	9.62	10.2
	Mean \pm SD	15.4 \pm 12.3	16 \pm 11.3	12.4 \pm 11.6	13.7 \pm 11.5

A: Immunologically quiescent donor (Results are graphically represented in the Figure 4 of this manuscript). B: Immunologically quiescent donor. C: Immunologically active donor. D: Immunologically active donor.

Table S2. Individual values and the means \pm standard deviations of the percentage of cells stained with Anti-CD45 and -CD14 from grouped quiescent and active *P. lividus* donors.

Donors	Percentage of cells	Control	PVP-AuNPs	<i>Vibrio</i>	PVP-AuNPs plus <i>Vibrio</i>
A	CD45 ⁺	17.83	14.53	2.06	4.02
B		1.08	1.54	0.48	1.16
C		0.06	0.16	1.31	1.95
D		2.44	4.25	0.28	0.73
	Mean \pm SD	5.35 \pm 8.38	5.12 \pm 6.5	1.03 \pm 0.82	1.97 \pm 1.46
A	CD14 ⁺	20.43	32.03	6.41	12.47
B		2.43	3.28	1.36	3.23
C		0.03	0.05	0.16	0.32
D		1.15	0.43	0.13	0.18
	Mean \pm SD	6.01 \pm 9.66	8.95 \pm 15.46	2.02 \pm 2.99	4.05 \pm 5.79

A: Immunologically quiescent donor. B: Immunologically quiescent donor. C: Immunologically active donor. D: Immunologically active donor.