

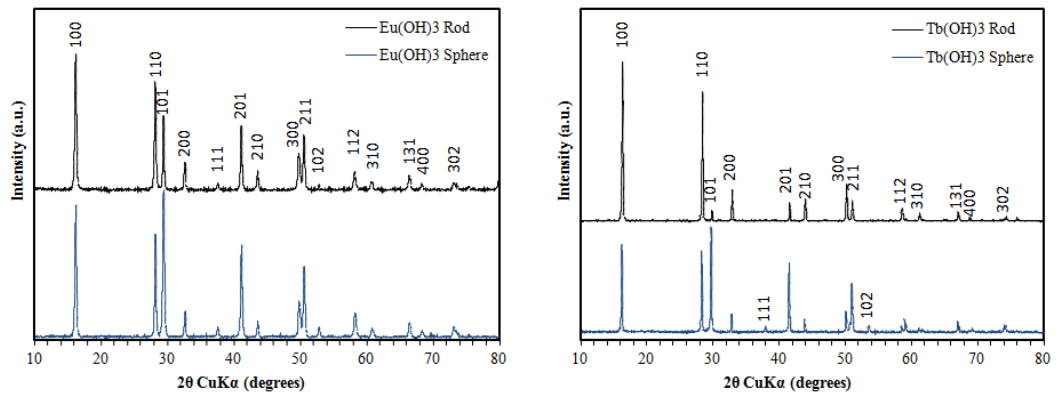
Supplemental Figure Legends

Supplemental Figure 1. X-ray powder diffraction patterns of $\text{Eu}(\text{OH})_3$ and $\text{Tb}(\text{OH})_3$ nanospheres and nanorods. All the peaks can be assigned to $\text{Ln}(\text{OH})_3$ ($\text{Ln} = \text{Eu}, \text{Tb}$), indicating high purity of the samples. The narrow sharp peaks suggest that all samples are highly crystalline.

Supplemental Figure 2. Manual analysis the *in vitro* proangiogenesis activity of lanthanide nanoparticles. **A.** Embryonic primary cell culture with $1\mu\text{g}/\text{ml}$ nanoparticles or $20\text{ ng}/\text{ml}$ VEGF. i) Blank control, ii) $20\text{ ng}/\text{ml}$ VEGF, iii) $1\mu\text{g}/\text{ml}$ Eu Rods, iv) $1\mu\text{g}/\text{ml}$ Eu Spheres, v) $1\mu\text{g}/\text{ml}$ Tb Rods, vi) $1\mu\text{g}/\text{ml}$ Tb Spheres. **B.** Quantitative analysis by Photoshop software.

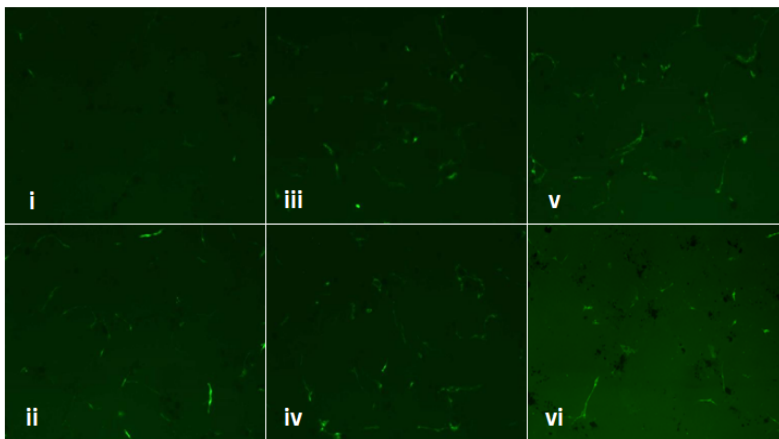
Supplemental Figure 3. Analysis of VEGF and IL-1 mRNA by qPCR between nano-treated and untreated embryos.

Supplemental Figure 1

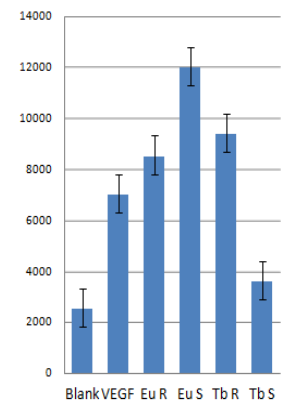


Supplemental Figure 2

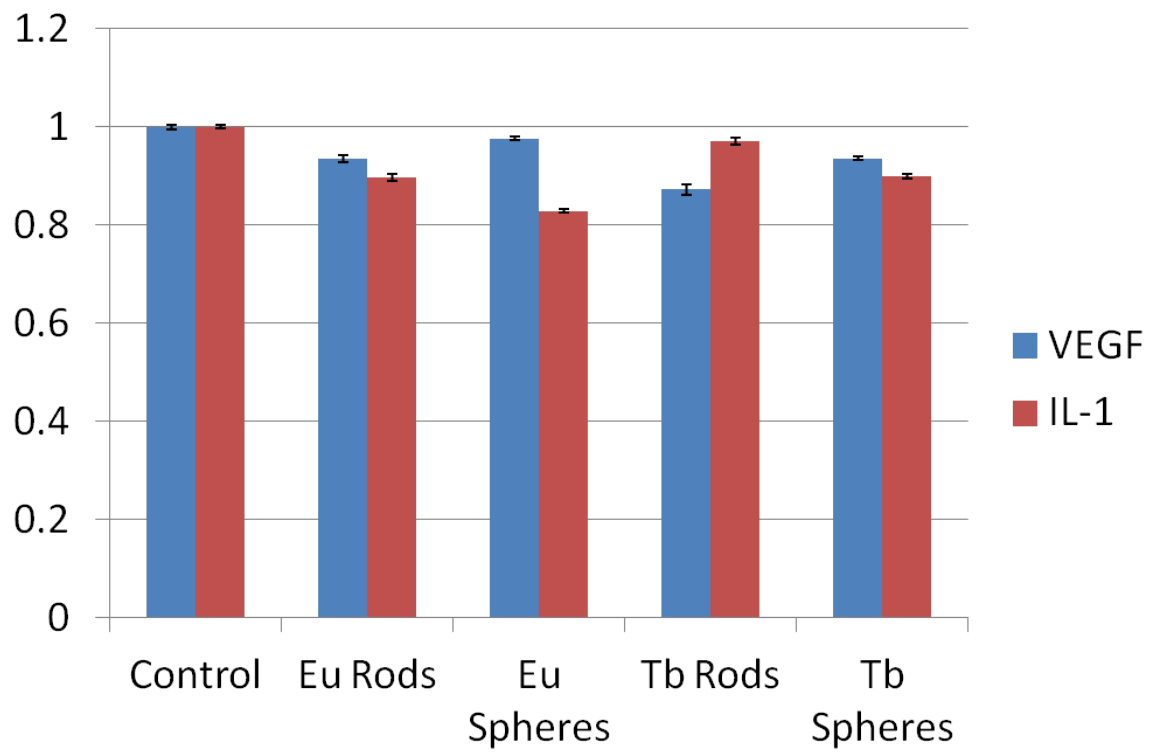
A



B



Supplemental Figure 3



Supplemental Tables

Supplemental Table 1. Table showing the hydrodynamic diameter and zeta potential of different nanoparticles in DI water, Holfreter's medium and L15 medium.

NPs	DI water			HM			L15		
	d_H (nm)	Pdl	ζ [mV]	d_H (nm)	Pdl	ζ [mV]	d_H (nm)	Pdl	ζ [mV]
EuR	358.1±9.5	0.142	-33.04±0.69	610.7±3.7	0.161	-25.66±2.96	567.1±2.8	0.313	-22.24±0.69
EuS	188.5±2.3	0.201	-25.40±0.40	687.9±18.5	0.119	-29.76±3.16	581.5±15.6	0.390	-29.76±3.16
TbR	1244.8±15	0.227	-21.52±0.26	1078.4±15.9	0.205	-15.28±1.73	1615.5±32.7	0.376	-15.28±1.73
TbS	404.7±33.8	0.128	-21.62±0.59	1454±75.3	0.253	-11.77±1.57	1063.4±27.3	0.316	-11.77±1.57

Hydrodynamic diameter, d_H (nm), Zeta potential, ζ (mV)

Zeta-potential and size of nanoparticles were measured by ZetaPALS.

Supplemental Table 2. Table showing the screening result of different nanoparticles.

	EuR	EuS	TbR	TbS	ZnO	TiO ₂	Graphene Oxide	Reduced Graphene Oxide
Proangiogenesis Activity	+	+	+	+	-	-	-	-

Supplemental methods.

X-ray powder diffraction.

X-ray powder diffraction (XRD, Panalytical X'Pert Pro diffractometer, Cu KR radiation) was utilized for phase identification and to determine the percent crystallinity in the final product. The XRD pattern was collected with a step size of 0.02° and counting time of 0.5 s per step over a range of 20-80°2 θ

qPCR primers:

β -actin Forward:

5'-TCAGCCATGGATGATGAAAT-3'

β -actin Reverse:

5'-GGTCAGGATCTTCATGAGGT-3'

VEGFaa Forward:

5'- GGCTGCCACATACCCAAAG-3'

VEGFaa Reverse:

5'- AGGCTCACAGTGGTTTTCTTTCT-3'

IL-1 Family Member A Forward:
5'-GTAGCTCGAGGTTGTGACCC-3'
IL-1 Family Member A Reverse:
5'-GGTTTGTCACGCTCAACACC-3'