Supporting Information

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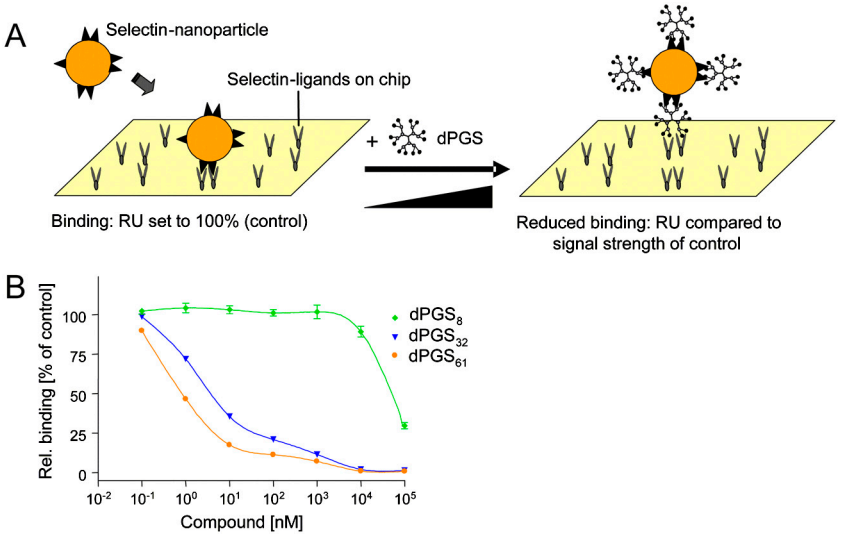

Fig. S1. Confirmation of sulfate dependency of selectin binding with dendritic polyglycerol sulfate (dPGS) derivatives bearing a different degree of functionalization on the same scaffold. By performing surface plasmon resonance (SPR) measurements, selectin labeled Au nanoparticles were passed over immobilized selectin ligands after preincubation with dPGS as competitor. One hundred percent binding refers to the control signal without any competitor (mean ± SEM of at least three independent measurements). (*A*) Scheme of the competitive SPR-based selectin binding assay. (*B*) By increasing the degree of sulfation of dPG ranging from 10% ($dPGS_8$) over 40% ($dPGS_{32}$) to 75% ($dPGS_{61}$) on the same dPG core (Mn = 6,000 g/mol), binding of L-selectin functionalized Au nanoparticles to immobilized ligands dropped indicating an increased inhibitory potential.

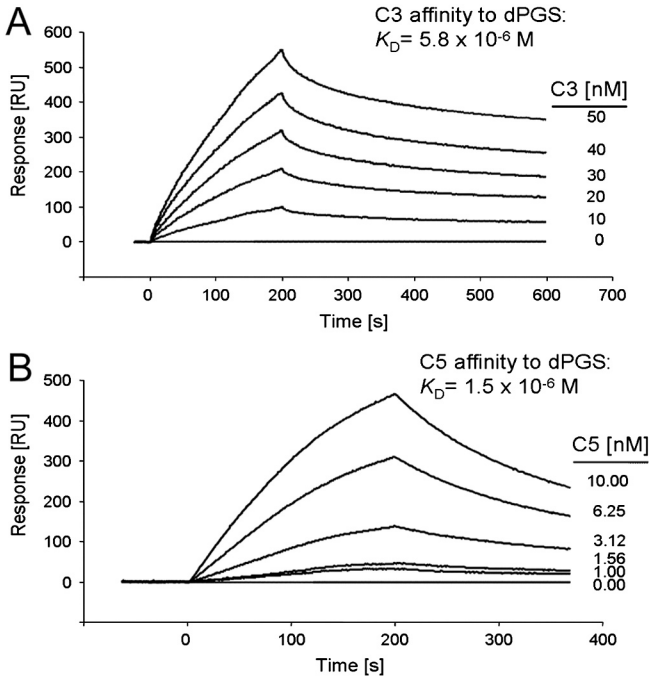

Fig. S2. Complement proteins C3 and C5 bind to dPGS. $dPGS_{61}$-biotin was immobilized on a sensor chip precoated with streptavidin. Direct binding of (*A*) C3 and (*B*) C5 (each purchased from Sigma) was recorded in running buffer (15 mM $NaHPO_4$, 150 mM NaCl, pH 7.2) at a flow rate of 30 μL/min with an association phase of 200 s and a dissociation phase of 400 s. Regeneration of the surface was done by injection of 4 M $MgCl_2$ at 100 μL/min for 60 sec. Proteins were used at five concentrations (10, 20, 30, 40, and 50 nM for C3 and 1, 1.56, 3.12, 6.25, and 10 nM for C5). Rate constants were calculated by using BIAevaluation software 4.1 assuming a 1:1 mode of binding.

Table S1. Characteristics of dendritic polyglycerols

Dendritic polyglycerols	MW core [Da]	DS [%]	Sulfate/molecule	MW compound [Da]	IC_{50} [nM]
dPG	3,000	0	0	3,000	No inhibition
TGS_4	240	85	4	650	2,000,000
$dPGS_8$	6,000	10	8	6,800	50,000
$dPGS_{29}$	2,500	85	29	5,500	90
$dPGS_{32}$	6,000	40	32	9,400	20
$dPGS_{46}$	4,000	85	46	8,600	30
$dPGS_{61}$	6,000	75	61	12,300	8

dPG, dendritic polyglycerol; TGS, triglycerol sulfate; dPGS, dendritic polyglycerol sulfate; DS, degree of sulfation determined by elemental analysis; molecular weight (MW) of the core structures was determined by MALDI-TOF mass spectrometry; MW of the compounds were calculated from MW of the core structure and the DS; content of sulfate/molecule was calculated. IC_{50} values refer to the inhibition of L-selectin ligand binding determined by surface plasmon resonance measurements. Triglycerol sulfate and dPGS are labeled with indexes that indicate the number of sulfate groups per TG or dPG core.