Supporting Information

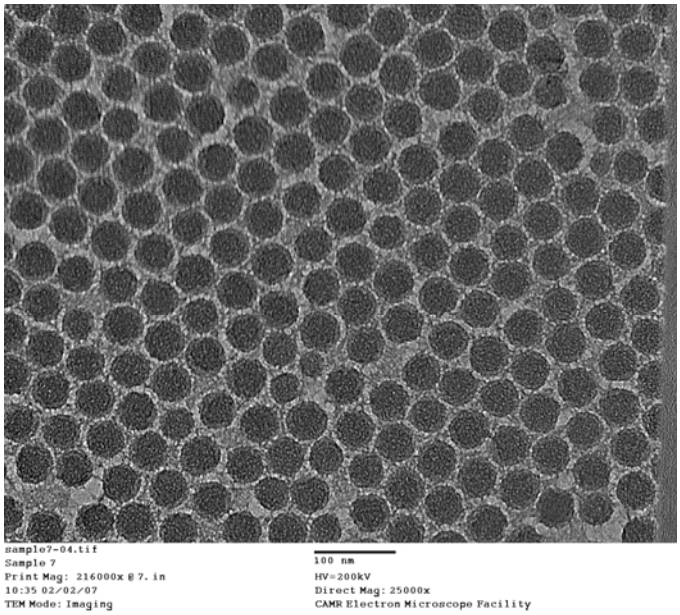


Figure 1. TEM image of close packed f(FL)-NP prepared in ethanol. The scale bar is 100 nm.

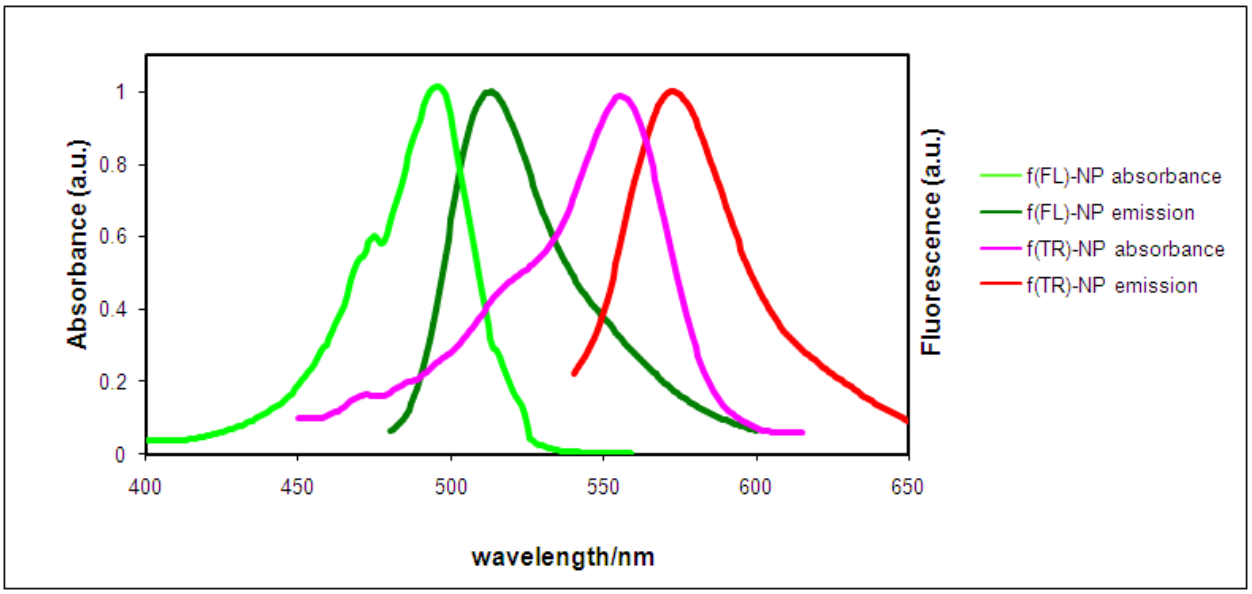
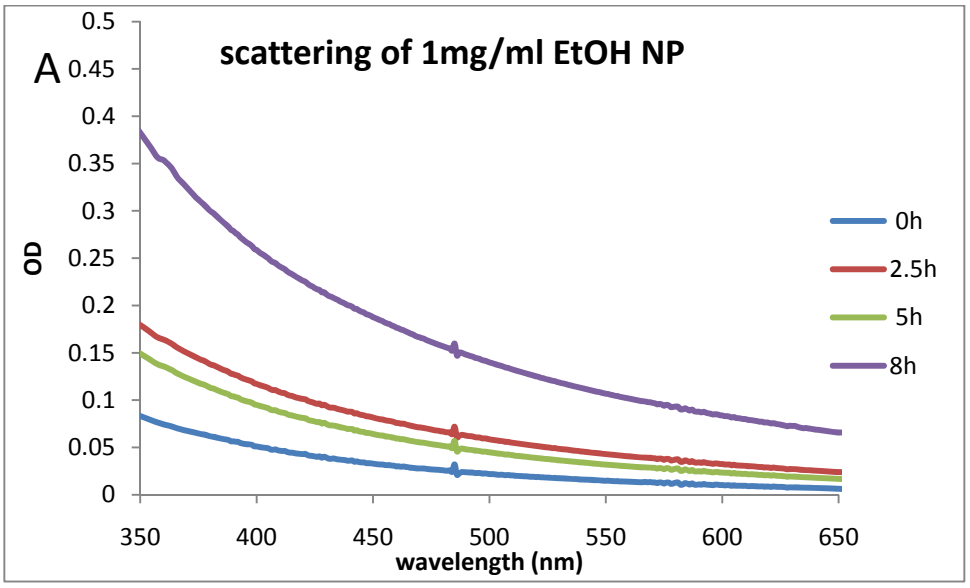


Figure 2. Normalized absorbance and emission spectrum of f(FL)NP and f(TR)NP.



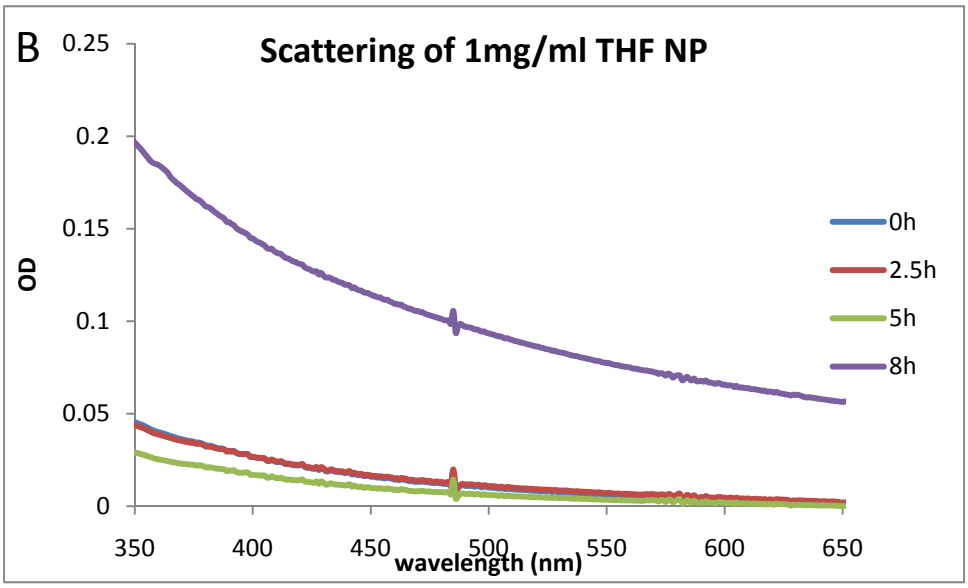


Figure 3 (A) Light scattering line shape of NP prepared by adding 1x APTS/EtOH solution 0-8 hours after the initiation of particle growth. (B) Light scattering line shape of NP prepared by adding APTS/THF solution 0-8 hours after the initiation of particle growth.

Table S1: Full names of ConA primary carbohydrate targets on microarray

Abbreviation of targets	Type	Description
ManT	carbohydrate	Manα1-6[Manα1-3]Manβ -BSA
Man7D1	carbohydrate	Manα1-6(Manα1-3)Manα1-6(Manα1-2Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA
Man8D1D3	carbohydrate	Manα1-2Manα1-6(Manα1-3)Manα1-6(Manα1-2Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA
Man9	carbohydrate	Manα1-2Manα1-6(Manα1-2Manα1-3)Manα1-6(Manα1-2Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA
Man7D3	carbohydrate	Manα1-2Manα1-6(Manα1-3)Manα1-6(Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA
Man5	carbohydrate	Manα1-6(Manα1-3)Manα1-6(Manα1-3)Manβ1-4GlcNAc-BSA
Man3	carbohydrate	Manα1-6(Manα1-3)Manβ1-4GlcNAc -BSA
Tgl	Glycoprotein	Thyroglobulin
CEA	Glycoprotein	carcinoembryonic antigen
Man6	carbohydrate	Manα1-6(Manα1-3)Manα1-6(Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA

Table S2. List of Carbohydrate Microarray Components

Group	Abbreviation	Description
Defined Glycans	3'SLacNAc	Sialylα2-3Galβ1-4GlcNAc – BSA (3'SLacNAc)
	6'Slac	Sialylα2-3Galβ1-4Glc-APD-HSA (6'SLac)
	Adi	GalNAcα1-3Galβ-BSA (Adi); 17/BSA
	alphaGal	Galα1-3Galβ1-4GlcNAc-BSA (aGal)
	Ara5	Araα1-5Araα1-5Araα1-5Araα1-5Araα1-BSA (Ara5)
	Bdi	Galα1-3Gal– BSA (Bdi)
	BG-A	GalNAcα1-3(Fucα1-2)Galβ- -BSA [BG-A]
	BG-A1	GalNAcα1-3(Fucα1-2)Galβ1-3GlcNAcβ1-3Galβ1-4(Glc)-APD-HSA (BG-A1)
	BG-B (EMD)	Galα1-3(Fucα1-2)Galβ-BSA [BG-B] from EMD
	BG-B (Dextra)	Galα1-3(Fucα1-2)Galβ-BSA [BG-B] from Dextra
	BG-H1	Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4Glcβ–APD-HSA [BG-H1]
	BG-H2	Fucα1-2Galβ1-4GlcNAcβ-HSA (BG-H2)
	Cellobiose	Glcβ1-4Glcβ-BSA (Cellobiose)
	Cellotriose	Glcβ1-4Glcβ1-4Glcβ-BSA
	Chito 3	GlcNAcβ1-4GlcNAcβ1-4GlcNAcβ-BSA (Chito 3)
	DSLNT	Siaα2-3Galβ1-3(Siaα2-6)GlcNAcβ1-3Galβ1-BSA (DSLNT)
	Fuc-a	Fuc-α - BSA
	Fuc-b	Fuc-β - BSA
	G2M4	Manβ1-4(Galα1-6)Manβ1-4(Galα1-6)Manβ1-4Manβ1-BSA (G2M4)
	GA1	Galβ1-3GalNAcβ1-4Galβ1-BSA (GA1tri or asialo-GM1); 20/BSA
	GA2di	GalNAcβ1-4Galβ - BSA (GA2di); 16/BSA
	Gal3	Galα1-3Galβ1-4Galα-BSA (Gal3)
	Gal-a	Gal-α - BSA
	Gala1-4Galb	Galα1-4Galβ-CETE(linker)-BSA

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Group	Abbreviation	Description
	Gal-b	Gal-β - BSA
	Galb1-6Man-a	Galβ1-6Man-α - BSA
	GalNAc-a	GalNAc-α - BSA; 22/BSA
	GalNAca1-6Galb	GalNAcα1-6Galβ-BSA; 21/BSA
	GalNAc-b	GalNAc-β - BSA
	Gb4	GalNAcβ1-3Galα1-4Galβ1-BSA (Gb4)
	Glc-a	Glc-α - BSA
	Glca1-6Glca1-4Glca1-4Glcb	Glcα1-6Glcα1-4Glcα1-4Glcβ-CETE-BSA
	Glc-b	Glc-β - BSA
	GlcNAca1-4Galb	GlcNAcα1-4Galβ-BSA
	GlcNAc-b	GlcNAc-β - BSA
	GM1	Galβ1-3GalNAcβ1-4(Siaα2-3)Galβ-4(Glc)-HSA (GM1)
	GM3	Sialylα2-3Galβ1-4Glc-APD-HSA (GM3)
	Isomaltose	Glcα1-6Glcβ-BSA (Isomalt)
	LacNAc	Galβ1-4GlcNAc – BSA (LacNAc,)
	Lactose	Galβ1-4Glcβ – BSA (Lac)
	LeA	Galβ1-3[Fuca1-4)GlcNAcβ1-3Galβ1-4Glcβ- BSA (Lea)
	LeB	Fucα1-2Galβ1-3[Fucα1-4)GlcNAcβ1-3Galβ1-4Glcβ-BSA (Leb)
	LeC	Galβ1-3GlcNAcβ – BSA (LeC)
	LeX (dimeric)	Di-LeX-APE-BSA
	LeX (monomeric)	Galβ1-4[Fucα1-3)GlcNAc-APD-HSA (Lex)
	LeY	Fucα1-2Galβ1-4[Fucα1-3)GlcNAc –HSA (Ley)
	LNnT	Galβ1-4GlcNAcβ1-3Galβ1-BSA (LNnT)
	LNT	Galβ1-3GlcNAcβ1-3Galβ-BSA (LNT); 20/BSA
	LSTa	Siaα2-3Galβ1-3GlcNAcβ1-3Galβ1-BSA (LSTa)

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Group	Abbreviation	Description
	LSTb	Galβ1-3(Siaα2-6)GlcNAcβ1-3Galβ1-BSA (LSTb)
	LSTc	Siaα2-6Galβ1-3GlcNAcβ1-3Galβ1-BSA (LSTc)
	Maltohexaose	Glcα1-4Glcβ-BSA (Maltose)
	Maltose	Glcα1-4Glcβ-BSA (Maltose)
	Man3	Manα1-6(Manα1-3)Manβ1-4GlcNAc -BSA (Man3)
	Man5	Manα1-6(Manα1-3)Manα1-6(Manα1-3)Manβ1-4GlcNAc-BSA (Man5)
	Man6	Manα1-2Manα1-3Manα1-6(Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA (Man6)
	Man7D1	Manα1-6(Manα1-3)Manα1-6(Manα1-2Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA (Man7D1)
	Man7D3	Manα1-2Manα1-6(Manα1-3)Manα1-6(Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA (Man7D3)
	Man8D1D3	Manα1-2Manα1-6(Manα1-3)Manα1-6(Manα1-2Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA
	Man9	Manα1-2Manα1-6(Manα1-2Manα1-3)Manα1-6(Manα1-2Manα1-2Manα1-3)Manβ1-4GlcNAc-BSA
	Man-a	Man-α - BSA
	Mana1-6Man-a	Manα1-6Man-α - BSA
	Manb4	Manβ1-4Manβ1-4Manβ1-4Manβ1-BSA (Manβ4)
	ManT	Manα1-6[Manα1-3]Manβ -BSA [ManT]
	P1	Galα1-4Galβ1-4GlcNAc-BSA (P1,)
	Pk or Gb3	Galα1-4Galβ1-4Glc-HSA [Pk or Gb3]
	pLNH	Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-BSA (pLNH)
	Rha-a	Rha-α – BSA
	Rha-b	Rha-β - BSA
	Sialyl LeA	Siaα-LeA-APD-HSA (SLeA)
	Sialyl LeX	Sialylα2-3Galβ1-4[Fucα1-3)GlcNAc – BSA
	SSSG	AcSer-Ser-Ser-Gly-BSA
	STnS	AcSer-(GalNAcα1-)Ser-Ser-Gly-BSA (STnS); 22/BSA

Group	Abbreviation	Description
	TF di	Galβ1-3GalNAcβ – HSA (GA1di)
	Tn	AcGalNAcα1-Thr-Gly-Hex
	Tn3	Ac(GalNAcα1-)Ser-(GalNAcα1-)Ser-(GalNAcα1-)Ser-Gly-Hex-BSA (Tn3); 15/BSA
	TriLacNAc	Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ-APE-HSA (TriLacNAc)
	X3Glc3	Xylα1-6Glcβ1-4(Xylα1-6)Glcβ1-4(Xylα1-6)Glcβ1-BSA (X3Glc3)
	Xylb4	Xylβ1-4Xylβ1-4Xylβ1-4Xylβ1-BSA (Xylβ4)
	AGE30	Advanced glycation endproducts produced from Glc + BSA after 30 days (AGE30)
	AGE60	Advanced glycation endproducts produced from Glc + BSA after 60 days (AGE60)
Glycoproteins	AGE90	Advanced glycation endproducts produced from Glc + BSA after 90 days (AGE90)
	Alpha-fetoprotein	alpha fetoprotein
	Alpha-1-acid glycoprotein	alpha1 Acid Glycoprotein
	Asialo-BSM	Asialo-Bovine submaxillary mucin (aBSM, Tn, TF, GlcNAcβ1-3GalNAc)
	Asialo-fetuin	asialofetuin
	Asialo-glycophorin	asialo-glycophorin (aGn)
	Asialo-OSM	asialo-Ovine submaxillary mucin (aOSM)
	Asialo-OSM (enzyme treated)	Ovine submaxillary mucin treated with PNGase, fucosidase, galactosidase (almost all Tn)
	BSM	Bovine submaxillary mucin (STn, STF, S-GlcNAcβ1-3, ~20% of sialic acid is acetylated at 7,8, or 9)
	BSM (deacetylated)	Deacetylated-Bovine submaxillary mucin (deAcBSM)
	CEA	carcinoembryonic antigen (CEA)
	FABP	Fatty Acid Binding Protein (FABP)
	Fetuin	fetuin
	Glycophorin	Glycophorin (Gn)

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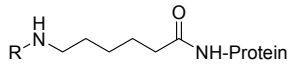
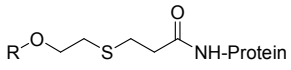
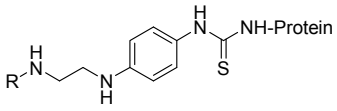
Group	Abbreviation	Description
	hsp90	Heat Shock Protein 90 (hsp90)
	KLH	Keyhole limpet hemocyanin
	KLH (oxidized)	periodate oxidized Keyhole limpet hemocyanin
	OSM	Ovine submaxillary mucin (94% STn, 4% TF, 2% Fuca1-2Galβ1-3GalNAc; some Tn/GalNAc too)
	OSM (enzyme treated)	Ovine submaxillary mucin treated with PNGase, fucosidase, galactosidase and N-acetylgalactosidase (almost all STn)
	Ovalbumin	ovalbumin
	PSA	Prostate Specific Antigen (PSA)
	Tgl	Thyroglobulin (Tgl)
	BSA#1	Bovine serum albumin
	Cy3	Cy3-labeled BSA
Controls	Cy5	Cy5-labeled BSA
	HSA	Human serum albumin (isolated from serum)
	rHSA	Human serum albumin (recombinant)

Linkers

Hex = 

CETE = 

APE = 

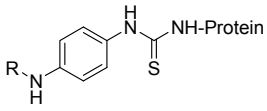
APD = 

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Table S3. Alternate descriptions of the ConA-conjugate solutions used to incubate the carbohydrate microarrays.

ConA Conjugate mass / mL	ConA mass / mL	Particle Number Density (# / mL)	Dye Number density (# / mL)
0.1 mg ConA-f(TR)NP / mL	5 μg[a]	0.98×10^{12} f(TR)NP[b]	0.77×10^{14} TR
0.5 mg ConA-f(TR)NP / mL	25 μg[a]	4.9×10^{12} f(TR)NP[b]	3.8×10^{14} TR
0.5 μg ConA-biotin / mL	0.5 μg	5.9×10^{12} ConA-biotin[c]	0.18×10^{14} Cy3[d]
5 μg ConA-biotin / mL	5 μg	59×10^{12} ConA-biotin[c]	1.8×10^{14} Cy3[d]

a) based on 50μg ConA / mg ConA-f(TR)NP (see text)

b) based of 46 nm diameter and 1.9 g/mL density

c) assumes ConA-biotin is dimeric. If primarily tetrameric, the numbers are twofold too large.

d) based on three Cy3 molecules per streptavidin and one streptavidin labeling each ConA biotin. Cy3 is not present in the ConA-biotin solution used to incubate the microarrays.