Supplementary materials

Table S1. In FLAP the pharmacophores for a ligand are defined in terms of the types of atoms, which can interact with the receptor. The types of atoms are classified based on the interactions:

Hydrogen bond donors (N1)
Hydrogen bond acceptors (O)
Positively charged centers (N+)
Negatively charged centers (O-)
Hydrophobic Centers (DRY)
Hydrogen bond donor-acceptor centers (OH, O1, N1 or N2)
Shape (H)

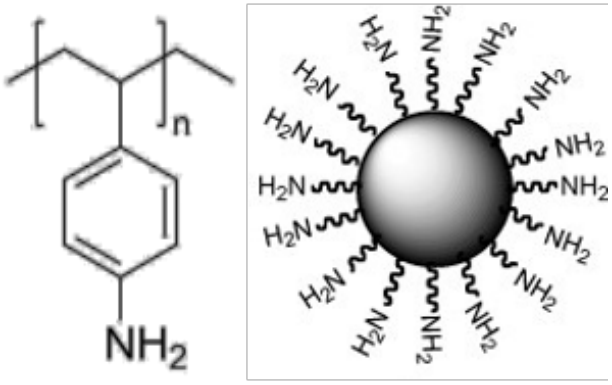

Figure S1. The amino-modified polystyrene nanoparticle used for the screening (Chemdraw software).

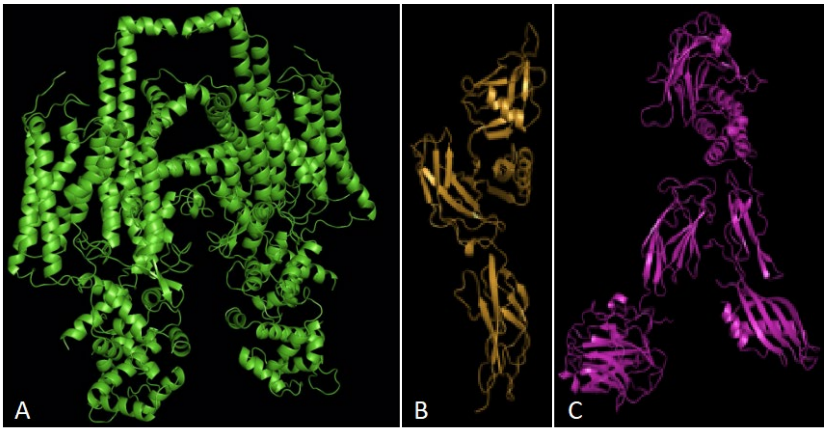

Figure S2. Crystallized structure of receptors. A) Receptor for retinol uptake stra6 (STRA6); B) Adhesion G protein–coupled receptor G6 (Adgrg6; also named GPR126); C) Contactin 4 (CNTN4) and amyloid beta precursor like protein 2 (APLP2) complex.

Table S2. Summarized table of all tested parameters expressed as mean ± standard deviation. ** indicates statistically significant differences (P<0.05).

Parameters	Time of exposure	CTRL	50 nm 10 mg/L	100 nm 10 mg/L	50 nm 20 mg/L	100 nm 20 mg/L
Mortality (%)	24 hpf	1±0.001	1±0.001	2.59±0.01	1.54±0.01	2.05±0.01
	48 hpf	1±0.001	1±0.001	3.1±0.001	1.54±0.01	2.05±0.01
	72 hpf	1±0.001	1±0.001	3.1±0.001	1.54±0.01	2.05±0.01
	96 hpf	1±0.001	5.19±0.04	4.65±0.02	2.08±0.001	2.55±0.02
Hatching (%)	24 hpf	-	-	-	-	-
	48 hpf	-	-	-	-	-
	72 hpf	46±0.02	2.6±0.03	-	-	-
	96 hpf	82±0.26	11±0.06**	30±0.10**	0**	0**
Malformation (%)	24 hpf	-	-	-	-	-
	48 hpf	-	1±0.001	-	-	-
	72 hpf	-	1±0.001	-	-	-
	96 hpf	-	1±0.001	2.8±0.001	7.1±0.001*	1±0.001
ROS (%)	96 hpf	3±0.012	3±0.015	4±0.01	93±0.04**	97±0.04**
Apoptosis (%)	96 hpf	1±0.015	54±0.04**	74±0.015**	75±0.04**	88±0.025**
Fluorescence Intensity	96 h					
Eye		15.06±0.007	28.01±0.08**	25.98±0.005**	55.73±0.009**	64.36±0.04**
Yolk sac		15.05±0.03	26.58±0.04**	20.06±0.02**	38.29±0.02**	69.98±0.04**

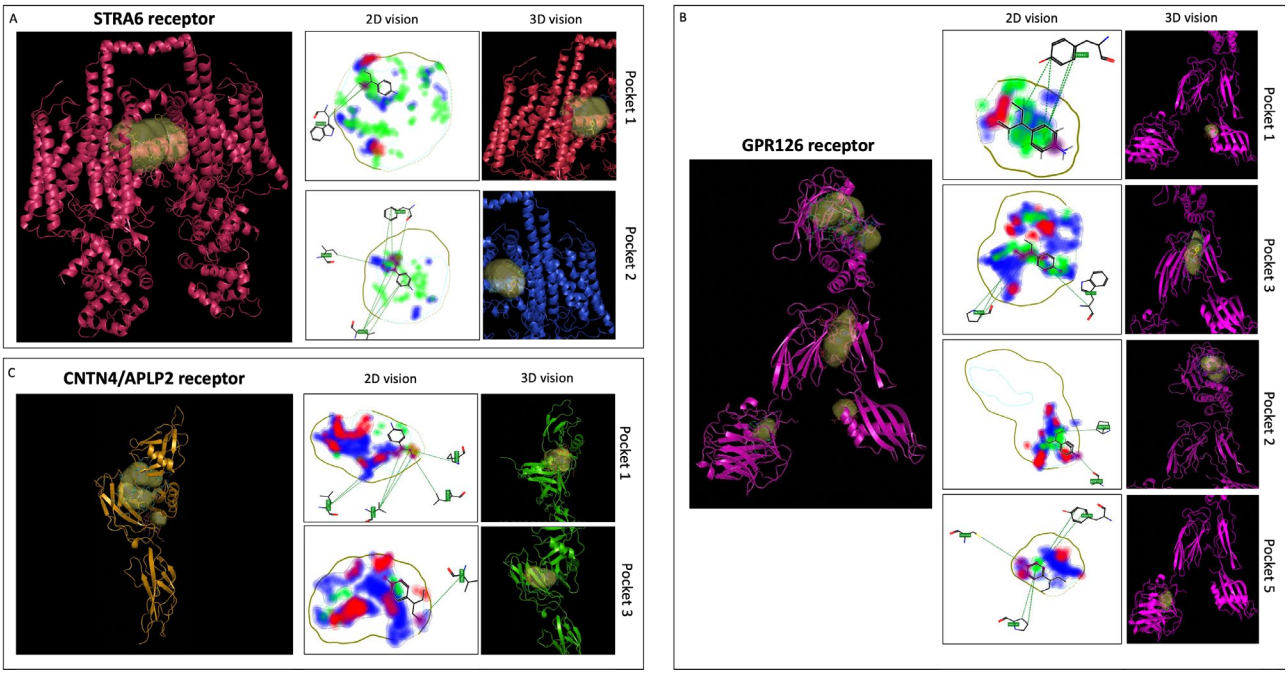

Figure S3. Crystallized structure of *D. rerio* receptors with visible Pockets. A) Receptor for retinol uptake stra6 (STRA6) with 2D and 3D visions of Pockets 1 and 2; B) Adhesion G protein–coupled receptor G6 (Adgrg6; also

named GPR126) with 2D and 3D visions of Pockets 1, 3, 2 and 5; C) Contactin 4 (CNTN4) and amyloid beta precursor like protein 2 (APLP2) complex with 2D and 3D visions of Pockets 1 and 3.

Table S3. Affinity of nPS-NPs toward the pockets of STRA6, GPR126 and CNTN4/APLP2 receptors based on potential bonding types (summarized through Glob-Sum) and pocket size.

Receptor	Candidate	Distance	Glob-Sum	Glob-Prod	H	N1	DRY	O
STRA6	**Pocket 1**	13.069	1.408	0.527	0,850	0,072	0,490	0
	Pocket 2	13.609	1.704	0	0,988	0	0,731	0
GPR126	**Pocket 1**	12.223	1.831	0.515	0.938	0.032	0.897	0
	Pocket 2	13.603	1.393	0.406	0.845	0.014	0.534	0
	Pocket 3	11.824	1.723	0.584	0.978	0.107	0.799	0
	Pocket 5	13.994	1.231	0.371	0.817	0.023	0.402	0
CNTN4/APLP2	**Pocket 1**	12.893	1.364	0.522	0.950	0.078	0.518	0
	Pocket 3	13.583	1.277	0.447	0.894	0.034	0.424	0