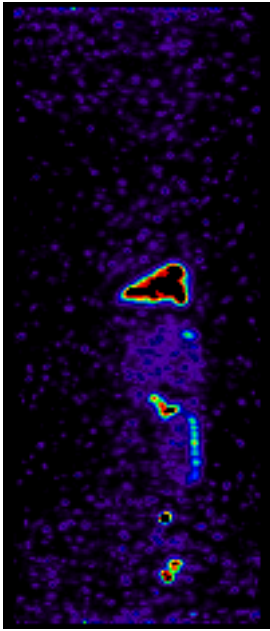


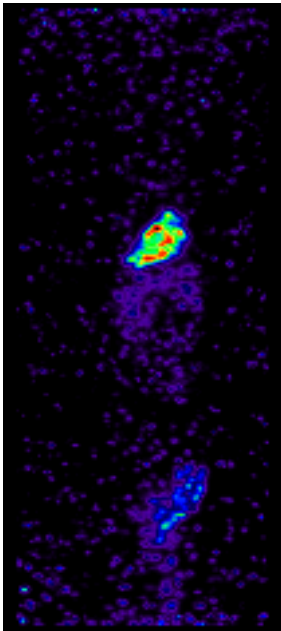
Supporting Information for:

# **Triazine dendrimers as non-viral vectors for in vitro and in vivo RNAi: The effects of peripheral groups and core structure on biological activity**

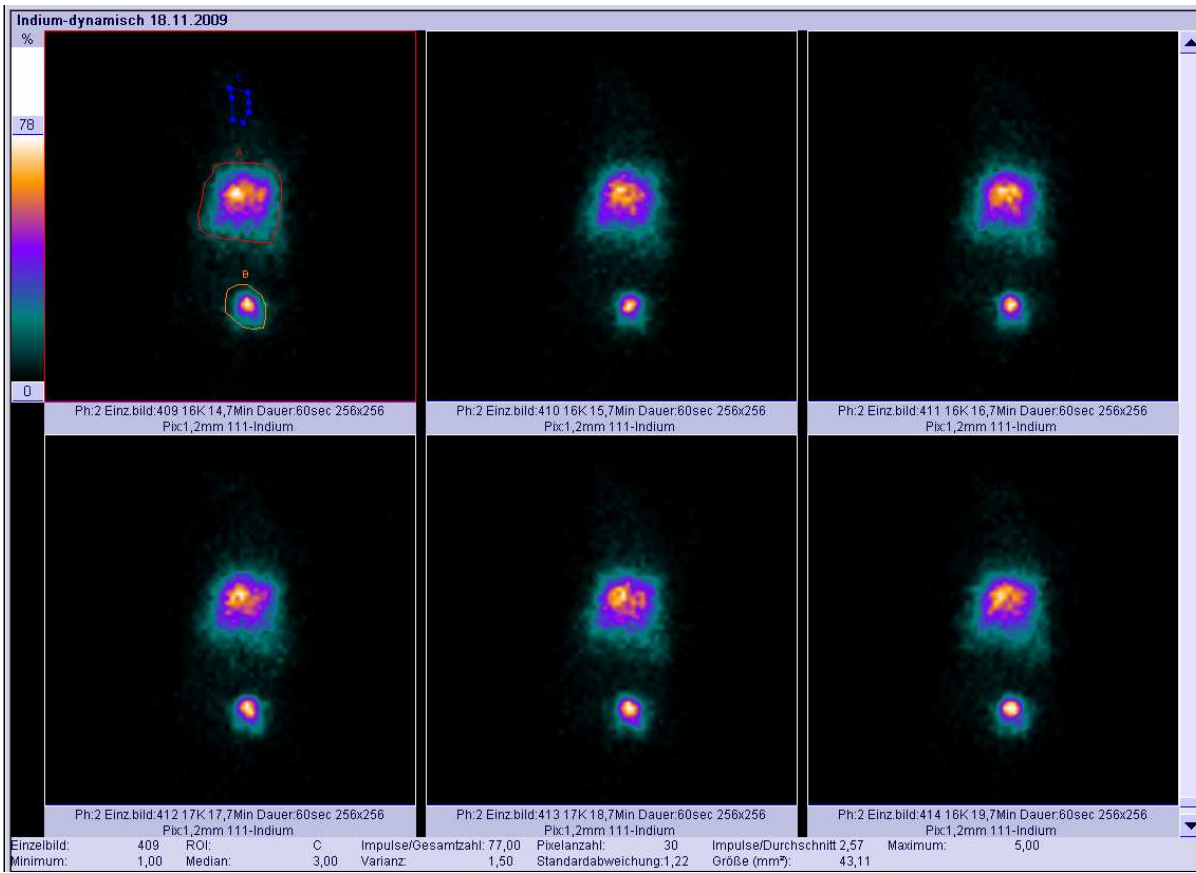
Olivia M. Merkel<sup>a1</sup>, Meredith A. Mintzer<sup>b1</sup>, Damiano Librizzi<sup>c</sup>, Olga Samsonova<sup>a</sup>, Tanja Dicke<sup>d,e</sup>, Brian Sproat<sup>f,g</sup>, Holger Garn<sup>d,e</sup>, Peter J. Barth<sup>h</sup>, Eric E. Simanek<sup>b</sup>, and Thomas Kissel<sup>a\*</sup>



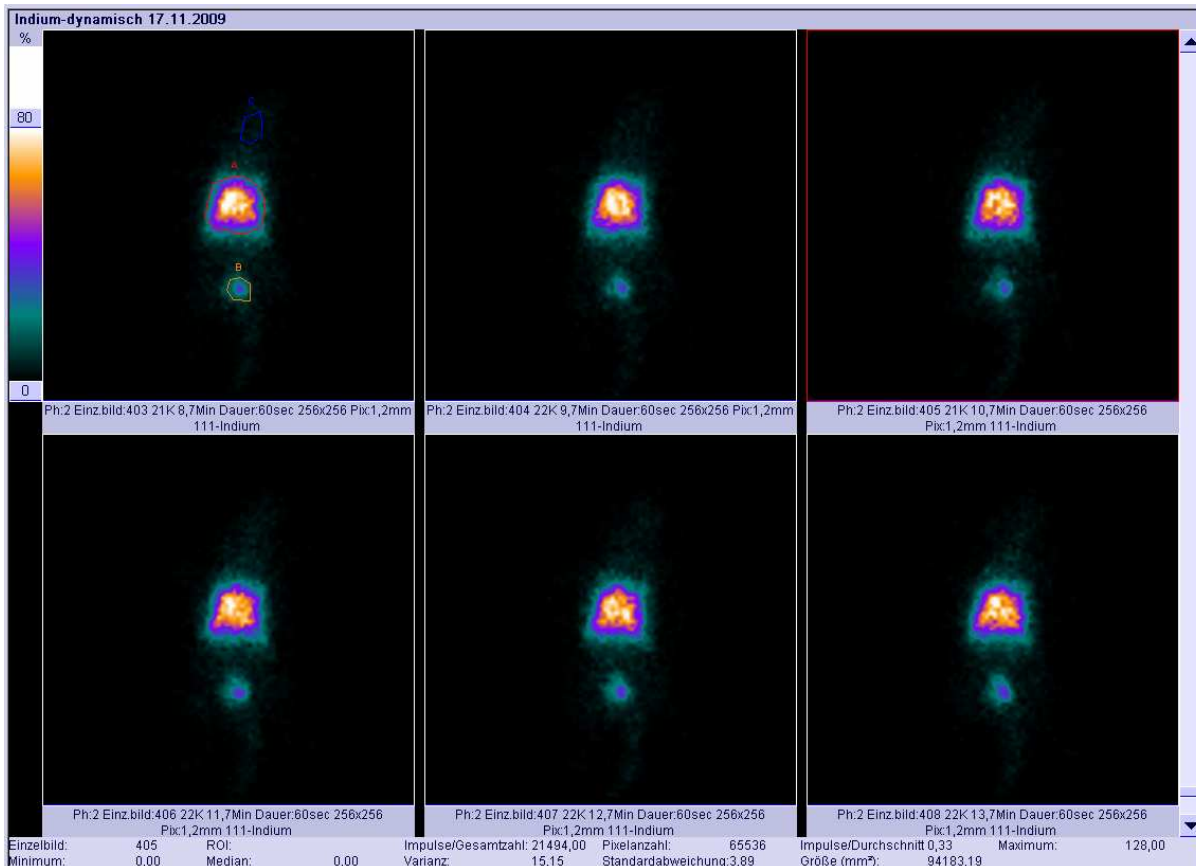
**SI Figure 1.** Three-dimensional SPECT image of the biodistribution of siRNA complexes with the guanidinylated dendrimer G2-1g.



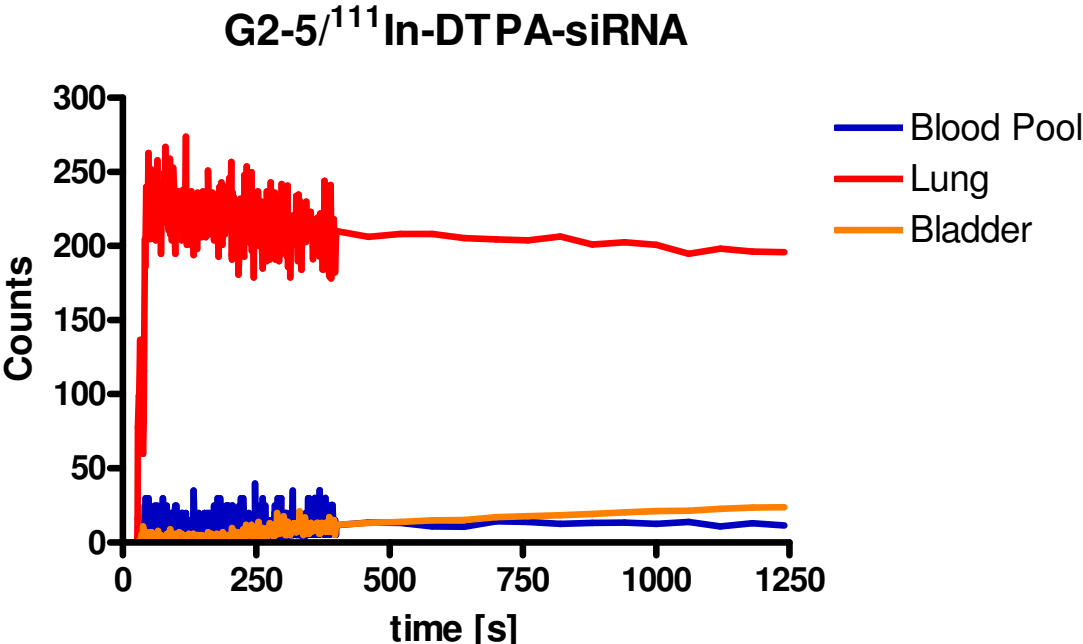
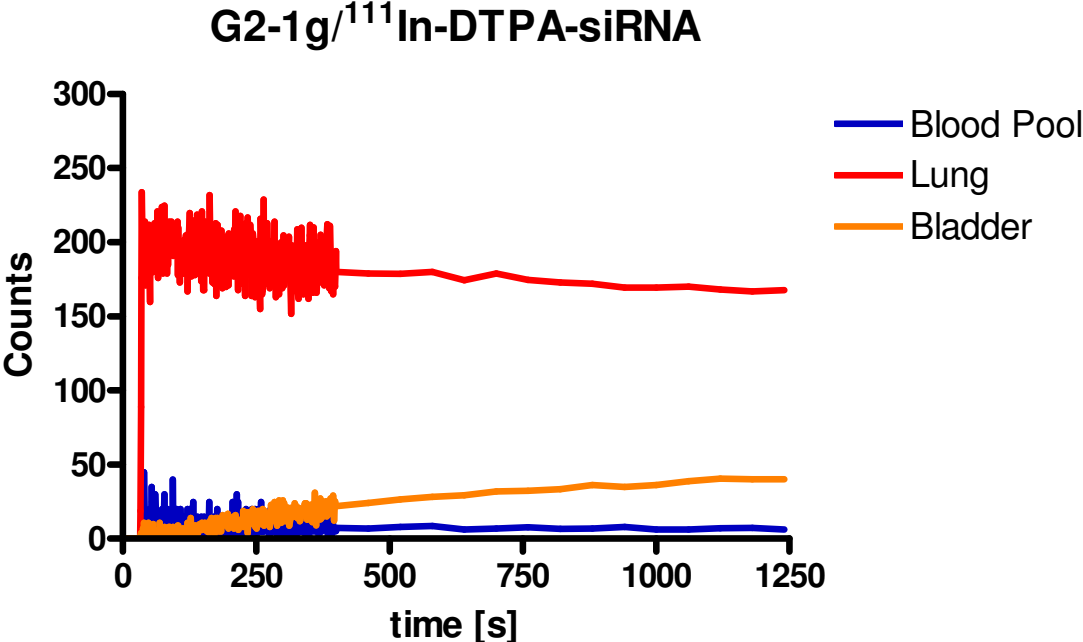
**SI Figure 2.** Three-dimensional SPECT image of the biodistribution of siRNA complexes with the alkylated dendrimer G2-5.



**SI Figure 3.** Real-time recordings of the biodistribution of siRNA/G2-1g dendriplexes. Regions of interest (ROIs) are shown for A: lung, B: bladder, C: blood pool.



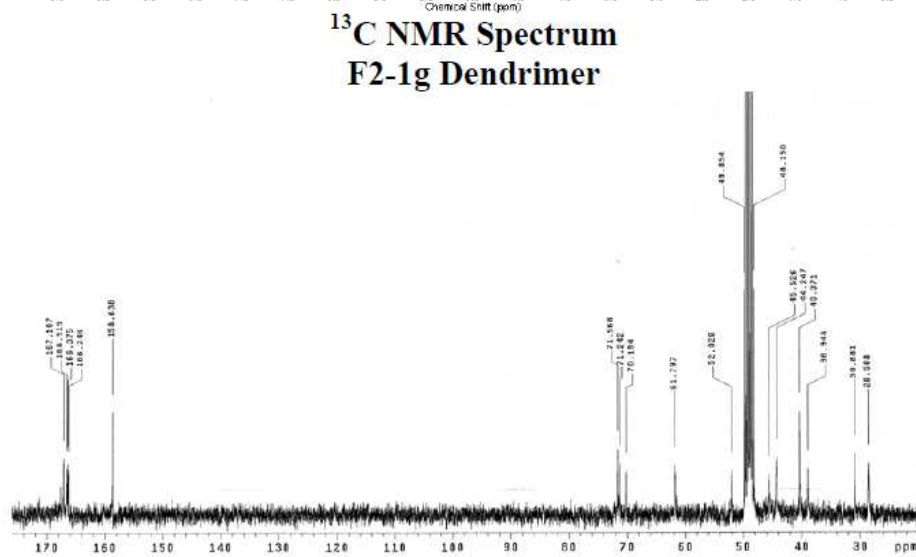
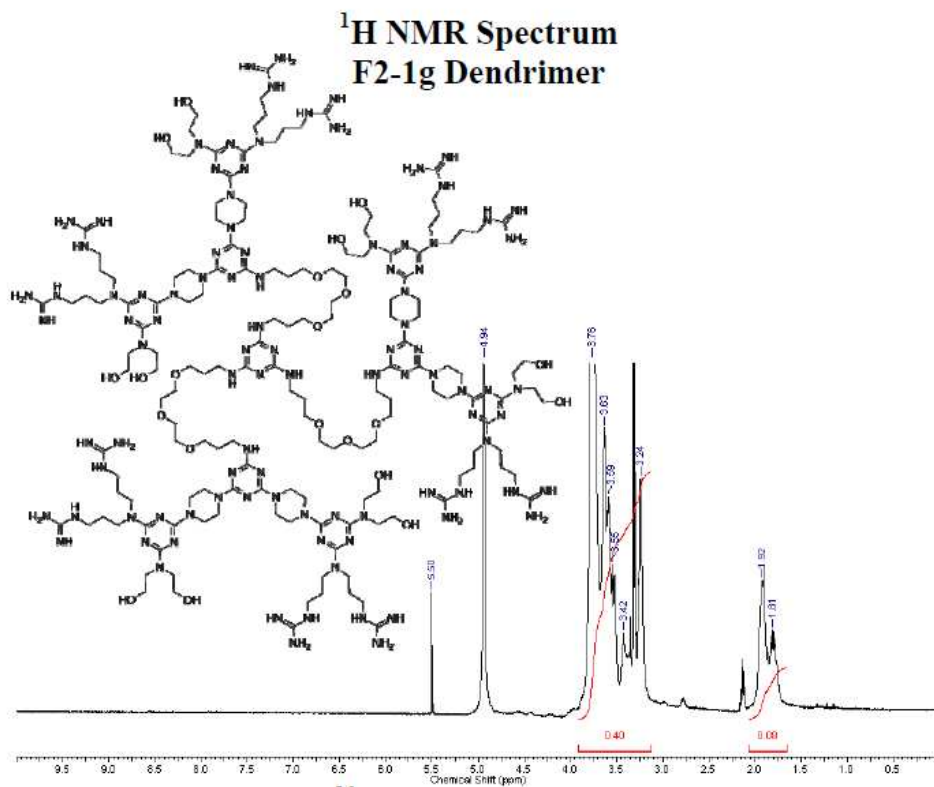
SI Figure 4: Real-time recordings of the biodistribution of siRNA/G2-5 dendriplexes. Regions of interest (ROIs) are shown for A: lung, B: bladder, C: blood pool.



SI Figure 5. Analysis of the kinetics of radioactivity in the regions of interest (ROIs) in the real-time recordings of the biodistribution of A siRNA/G2-1g and B siRNA/G2-5 dendriplexes.

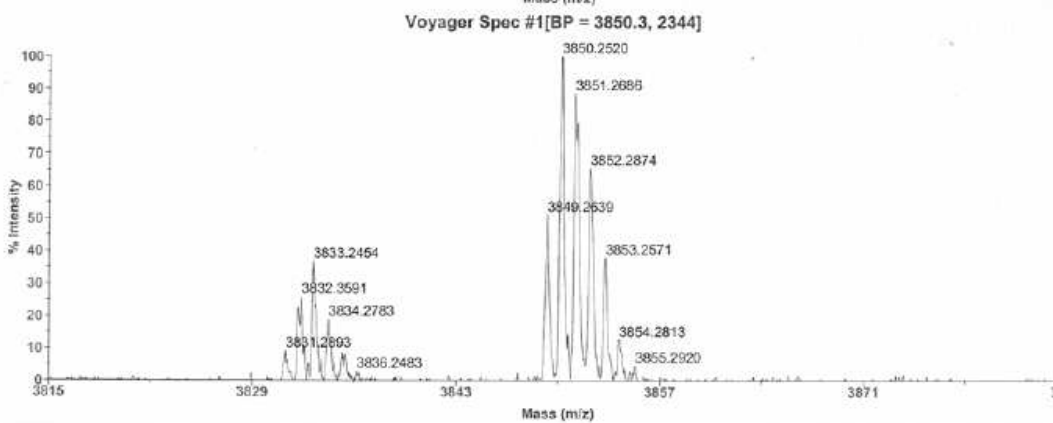
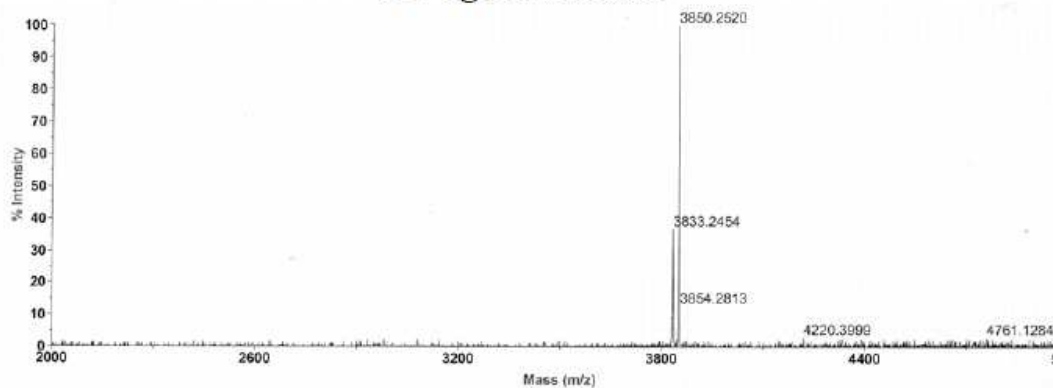
## Synthesis of F2-1g:

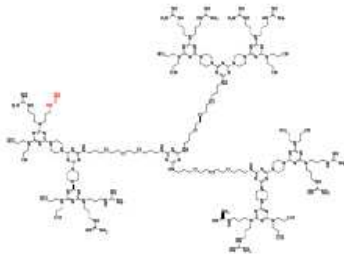
**F2-1** (0.03 g, 0.01 mmol) was dissolved in 1.5 mL distilled water. 1*H*-pyrazole-1-carboxamide•HCl (0.17 g, 1.18 mmol) and DIPEA (0.10 mL, 0.57 mmol) were mixed in 2 mL acetonitrile. When the acetonitrile solution became clear, the distilled water solution was added and the mixture was stirred at room temperature. After 24 hours the solvents were removed, and the mixture was re-dissolved in diionized water. Excess starting material was removed from the solution using an Amicon apparatus and a millipore membrane with NMWL = 1,000 under 35 psi N<sub>2</sub>. The filtrate was tested for Clusing AgNO<sub>3</sub>. When no AgCl precipitate formed the solution remaining inside the Amicon vessel was evaporated *in vacuo* to afford **F2-1g** (29.3 mg, 82%). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ: 3.76 (br, 96H, CH<sub>2</sub>OH, NCH<sub>2</sub>CH<sub>2</sub>OH, piperazine), 3.50-3.63 (br, 60H, CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>, NCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>NHBoc), 3.24 (t, 24H, NCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>NHCNHNH<sub>2</sub>), 1.90 (m, 12H, CH<sub>2</sub>NH), 1.72 (quartet, 24H, NCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>NHCNHNH<sub>2</sub>). <sup>13</sup>C NMR (300 MHz, CDCl<sub>3</sub>) δ: 167.1 (C<sub>3</sub>N<sub>3</sub>), 166.5 (C<sub>3</sub>N<sub>3</sub>), , 166.4 (C<sub>3</sub>N<sub>3</sub>), 166.2 (C<sub>3</sub>N<sub>3</sub>), 158.6 (CNHNH<sub>0</sub>), 71.6 (CH<sub>2</sub>OCH<sub>2</sub>), 71.2 (CH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>), 70.2 (NHCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>O), 61.8 (CH<sub>2</sub>OH), 52.0 (NCH<sub>2</sub>CH<sub>2</sub>OH), 45.5 (NCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>NHCNHNH<sub>2</sub>), 44.2 (piperazine), 40.4 (CH<sub>2</sub>NH), 38.9 (CH<sub>2</sub>NHCNHNH<sub>2</sub>), 30.9 (CH<sub>2</sub>CH<sub>2</sub>NH), 28.5 (NCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>NHCNHNH<sub>2</sub>). MS (MALDI): calcd 3848.5 (M<sup>+</sup>); found 3849.3 (M + H<sup>+</sup>).



SI Figure 6.  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of dendrimer **F2-1g**.

## Mass Spectrum F2-1g Dendrimer



| Compound  | Exact Mass |
|---|------------|
|  | 3833.48    |

**SI Figure 7.** Mass spectrum, structure and exact mass of dendrimer **F2-1g**.