**Supporting material**

The additional material shows the information of an ex vivo experiment (Fig S1) as well as all patient related data (Fig S2-S12)

A diagram of a cell number

Description automatically generated with medium confidence

Fig. S1 – TRF measurements of a representative donor. Eu-DOTA uptake was measured by time resolved fluorescence spectroscopy in WBCs. **A**: TRF spectra were recorded from the 0 min (**–**) as well from the 60 min sample (**–**) and the area under the curve was obtained by integrating the fluorescence intensity. **B**: By a set of standard samples of known concentrations (⭘), a standard curve was fitted using linear regression. Using the standard curve, the concentrations of Eu3+ of the 0-minute (◼) and 60-minute (◼) samples were determined by interpolation. **C**: The Eu-DOTA uptake by human WBC cells after incubation was calculated from the difference in Eu3+ concentration between the measurements after 0 min and 60 min incubation time. **D**: By considering the sample volumes, the Eu3+ concentration Δ, the average cell number used in the experiments and the mean cell diameter of the WBCs, the intracellular Eu3+ concentration was calculated.



Fig. S2 – Patients’ age distribution showing a median (black horizontal line) of 68.0 y   
(●= ♀; ●= ♂).



Fig. S3 – weight distribution. Average: 72.9 kg ± 16 (1q = 61.8; 2q = 73.3 median (black horizontal line); 3q = 80.5; ●= ♀; ●= ♂.



Fig. S4 – height distribution. Average: 1.71 m ± 0.07 (1q = 1.68; 2q = 1.70 median (black horizontal line); 3q = 1.75; ●= ♀; ●= ♂.



Fig. S5 – BMI. Average: 24.8 ± 4.4; 1q = 22.4; 2q = 24.9 median (black horizontal line); 3q = 27.2; ●= ♀; ●= ♂.



Fig. S6 – Blood group; ●= ♀; ●= ♂.



Fig. S7 – GBCA blood concentration: Average: 1.5 mM ± 0.1; 1q = 1.48; 2q = 1.53 median (black horizontal line); 3q = 1.60; ●= ♀; ●= ♂.



Fig. S8 – Time from GBCA administration to first fixation of the WBCs (tx): Average: 17 min ± 3; 1q = 15; 2q = 17 median (black horizontal line); 3q = 18; ●= ♀; ●= ♂.



Fig. S9 – The cellular concentration of Gd from the time point tx to t60 increased. Between these two time points the blood Gd-DOTA concentration remained constant. Gd concentration at t0 is at zero since this time point represents the Gd level in absence of the contrast agent.



Fig. S10 – Correlation studies: intracellular Gd vs. incubation time  
Correlation analysis according to Pearson (R2, rP) as well as Spearman (rS). both showed that there is no correlation (R2/ rP:  0.0134 / ̵ 0.1159; rS: ̵ 0.1834) ●= ♀; ●= ♂.



Fig. S11 – Correlation studies: intracellular c Gd (t60) vs. BMI  
R2 and rP form the Pearson as well as rS form the Spearman correlation analysis were close to 0, hence, a correlation can be excluded   
(R2/ rP:  0.0002 / ̵ 0.0155; rS: 0.0272); ●= ♀; ●= ♂.



Fig. S12 – Correlation studies: intracellular Gd (t60) vs. GBCA blood concentration.  
Correlation analysis was performed according to Pearson (R2, rP) as well as Spearman (rS). Both analyses provided no evidence for a correlation  
(R2/ rP:  0.0850 / ̵ 0.2915; rS: ̵ 0.0372); ●= ♀; ●= ♂.