Supplementary information for:

**Imaging of human insulin secreting cells with Gd-DOTA-P88, a paramagnetic contrast agent targeting the beta cell biomarker FXYD2γa**

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* = These authors contributed equally to this work.
**Supplementary Table 1:** Clinical characteristics of the organ donors used for human islet isolation.

<table>
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<th>Sample identity</th>
<th>Gender</th>
<th>Age (years)</th>
<th>BMI (Kg/m²)</th>
<th>Purity (% beta cells)</th>
<th>Cause of Death</th>
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<td>ID291108</td>
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<td>77</td>
<td>23.8</td>
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<td>27.7</td>
<td>59</td>
<td>Post-anoxic encephalopathy</td>
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<tr>
<td>ID200810</td>
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<td>24.9</td>
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<tr>
<td>ID290110</td>
<td>Female</td>
<td>74</td>
<td>27.1</td>
<td>38</td>
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Isolated human islets were used for quantitative PCR (qPCR). All donors were anonymized and the material was annotated with a sample identity. The % of beta cells in each preparation was defined by insulin immunofluorescence.
Figure S2

A

B

CHO wt

CHO FXYD2ga
Figure S3

A

Pre-contrast

B

49 min post-Gd-DOTA-P88
Figure S4

[Chemical reaction diagram showing the synthesis process involving peptides and molecular structures with annotations for reagents and conditions.]
Figure S5

Blot from figure 3B

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Pictures from figure 3c

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Supplementary Figure 1. MR imaging using Gd-DOTA-P88 and Gd-DOTA-Scramble in mice implanted with CHO-FXYD2γa+ or wildtype CHO cells.

(A-B) Representative MR images of mice implanted with CHO-FXYD2γa+ or wildtype CHO cells. Pre-contrast images were acquired before the injection of CAs and the post-contrast images were obtained about 95 minutes after i.v. administration of 0.1 mmol Gd/kg b.w. of Gd-DOTA-P88 (A) or Gd-DOTA-Scramble (B). Mice were implanted with CHO-FXYD2γa+ in the right hind leg and wildtype CHO cells in the left hind leg (tumors are pointed by arrows). The images are representative of 3-4 similar experiments. Representative ROIs are drawn for xenograft (red) and noise (yellow), used for SNR quantification.

Supplementary Figure 2. Confirmation of FXYD2γa expression in CHO cells transfected with the plasmid encoding FXYD2γa.

(A) Human FXYD2γa mRNA expression was determined by qPCR in wildtype and FXYD2γa+ CHO cells; n = 3, mean ± SEM. (B) A representative immunofluorescence image of FXYD2γa+ and wt CHO cells stained with SPY393. The images are representative of 3 similar experiments.

Supplementary Figure 3. Non-invasive MR imaging of EndoC-βH1 tumors in mice using Gd-DOTA-P88.

Representative images of the vehicle transplantation ring in the left hind leg before (A) and 49 minutes after the i.v. administration of Gd-DOTA-P88 (B). The images are representative of 4-5 similar experiments.

Supplementary Figure 4. Coupling of P88 peptide to NOTA and radiolabeling.

Scheme for the synthesis of Gd-NOTA-P88, produced by coupling P88 to NOTA. The radiolabeling step is also depicted.
Supplementary Figure 5. Original image for Figures 3B and 3C.