Near infrared fluorescence ocular imaging (NIRFOI) of Alzheimer's disease

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Supplemental Information

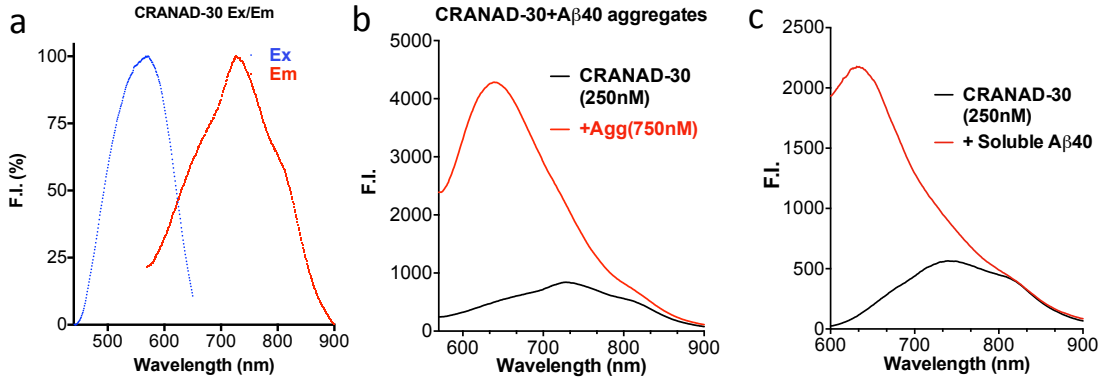
Materials and Methods

Reagents used in this report were purchased from Sigma-Aldrich and used without further purification. Synthetic Aβ peptides (1−40/42) were purchased from rPeptide (Bogart, GA, 30622). The pH of the PBS buffer was 7.4. CRANAD-2, -3, -30, -58, -61, -102 and LDS750 were dissolved in DMSO to prepare 25.0 μM stock solutions. Fluorescence measurements were carried out using an F-4500 fluorescence spectrophotometer (Hitachi). Transgenic female APP-PS1 mice and age matched wild-type female mice were purchased from Jackson Laboratory. NIRFOI was performed on IVIS®Spectrum (Perkin Elmer, Hopkinton, MA). All animal experiments were approved by the Institutional Animal Care and Use Committee at Massachusetts General Hospital.

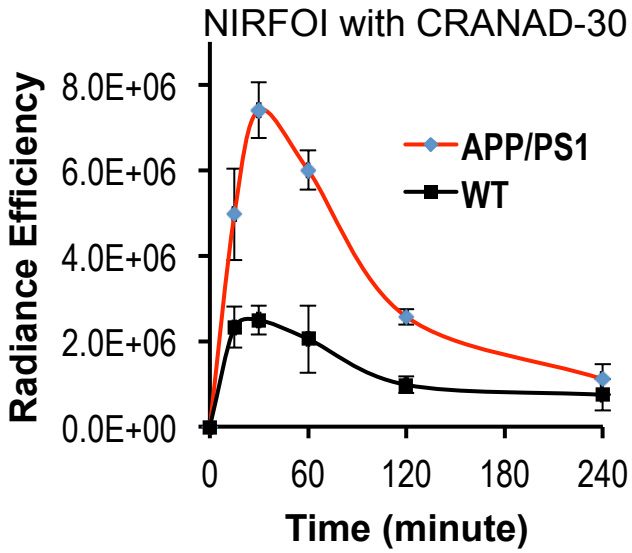
Fluorescence Spectral Testing of CRANAD-X with Aβs. To record the fluorescence response of CRANAD-X in the solution, we utilized the following procedures. Step 1: 1.0 mL of PBS buffer was added to a quartz cuvette as a blank control and its fluorescence was recorded with the same parameters as for CRANAD-X. Step 2: The fluorescence emission spectrum of a CRANAD-X solution (1.0 mL, 250 nM) was recorded with excitation at 560 nm and emission from 580 to 900 nm. Step 3: To the above solution of CRANAD-X 10 μL of Aβs (25 μM stock solution) was added to make the final Aβ concentration of 250 nM. The emission spectra of the resulting mixture at different time points were recorded as described in Step 2. The final spectra from steps 2

and 3 were corrected using the blank control from Step 1.

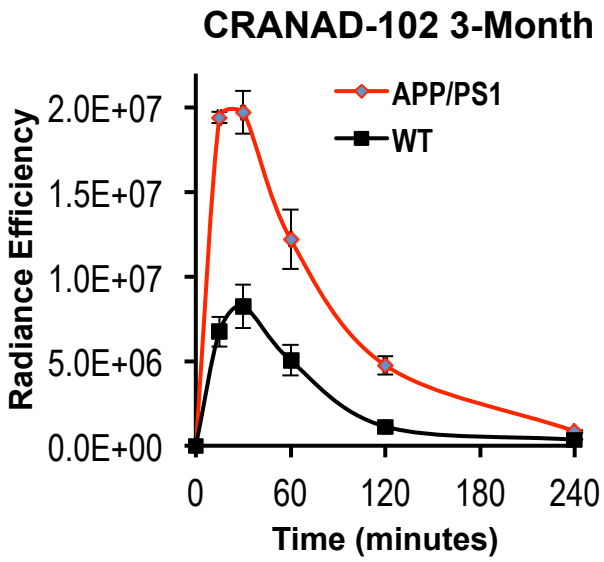
Supplemental Figures



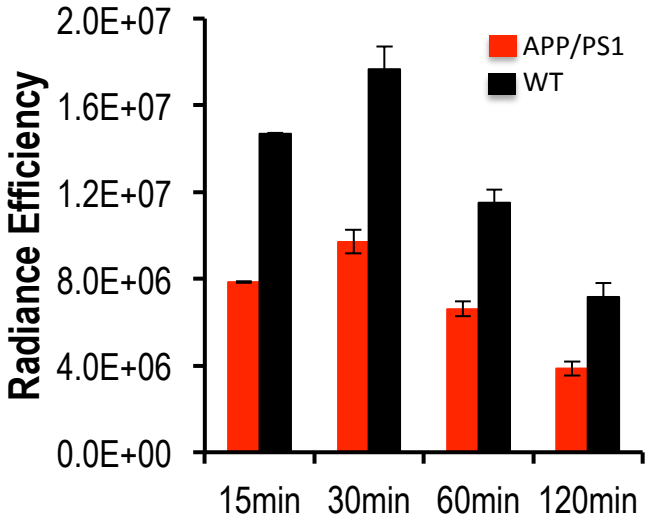
SI Fig.1 a) Excitation and emission spectra of CRANAD-30, and b-c) Fluorescence intensity and wavelengths changes upon mixing with various Aβs.



SI Fig.2 NIRFOI time-course of CRANAD-30 in 14-month old APP/PS1 mice and WT mice.



SI Fig.3 NIRFOI time-course of CRANAD-102 in 4-month old APP/PS1 mice and WT mice.



SI Fig.4 Quantitative analysis of NIRFOI of 14-month old APP/PS1 mice and WT mice with CRANAD-61.