

## Supporting Information

### **A T1 MRI detectable hyaluronic acid hydrogel for in vivo tracking after intracerebral injection in stroke**

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1.  $^1\text{H}$  NMR spectra of  $^1\text{H}$  NMR spectra of HA-PBA and HA-Fru-ADH derivatives, and 2D HSQC NMR spectrum of HA-Fru

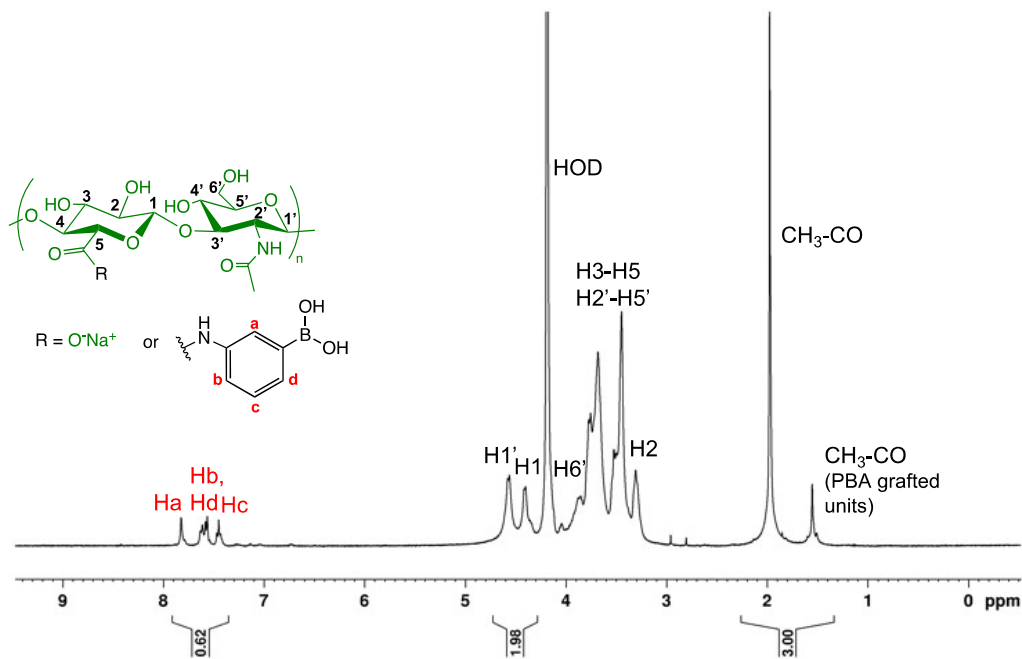
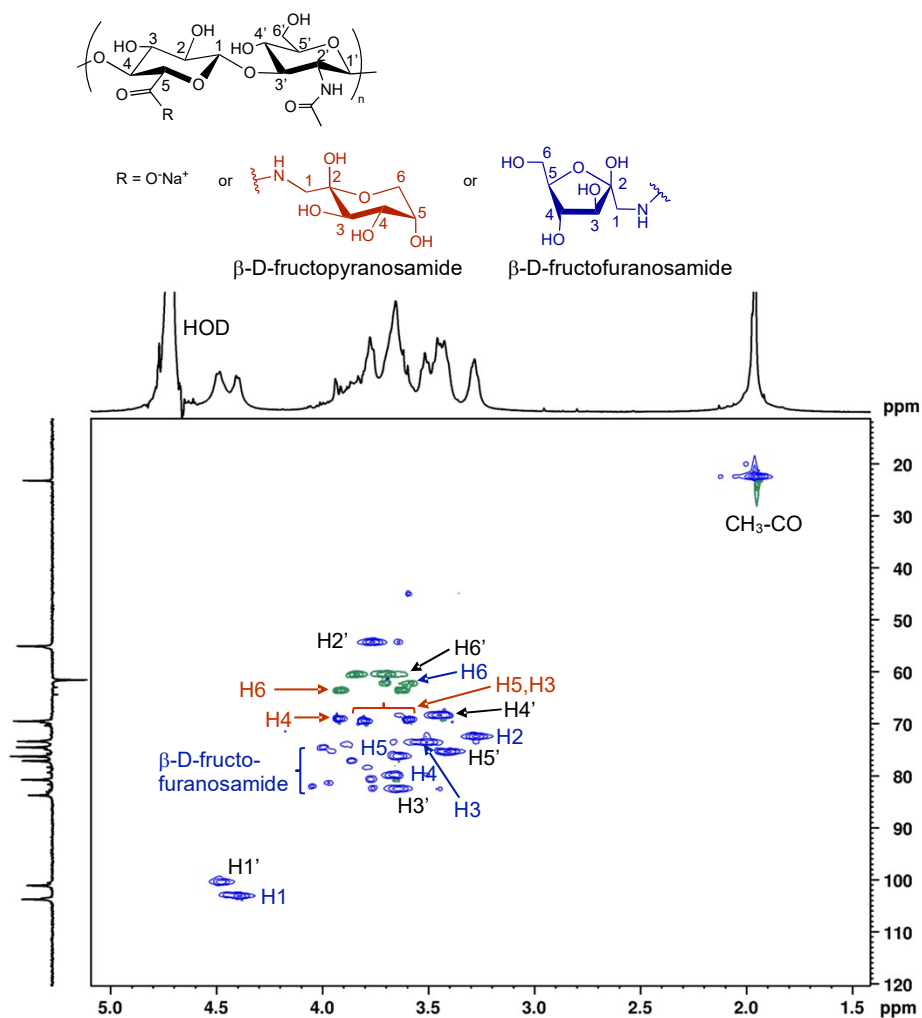
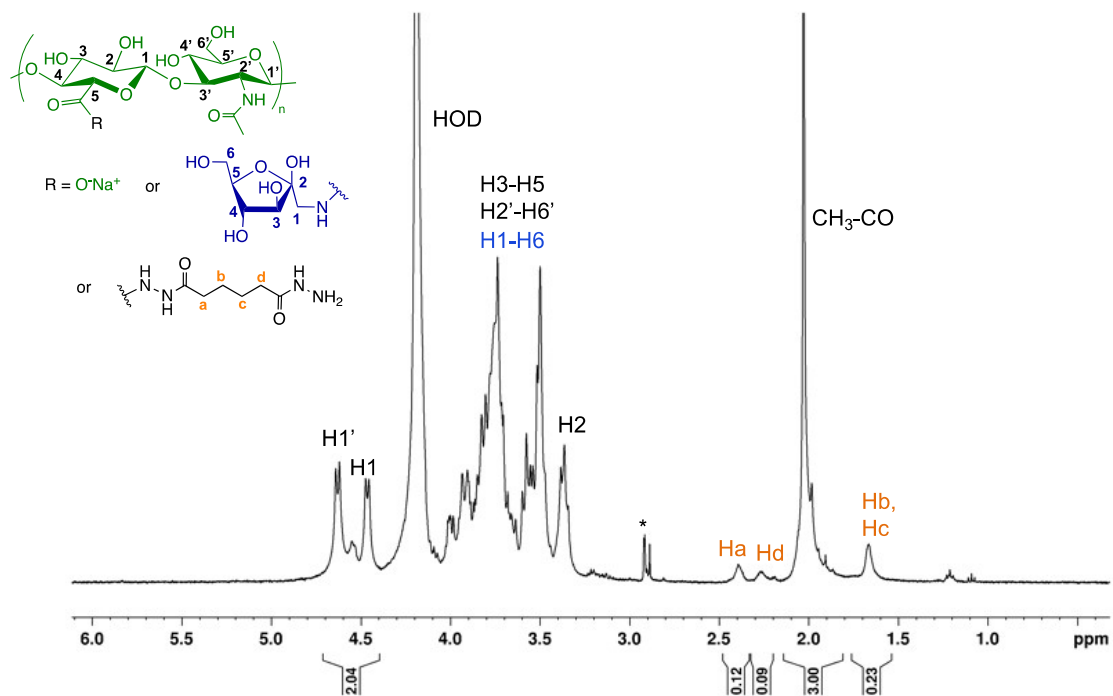


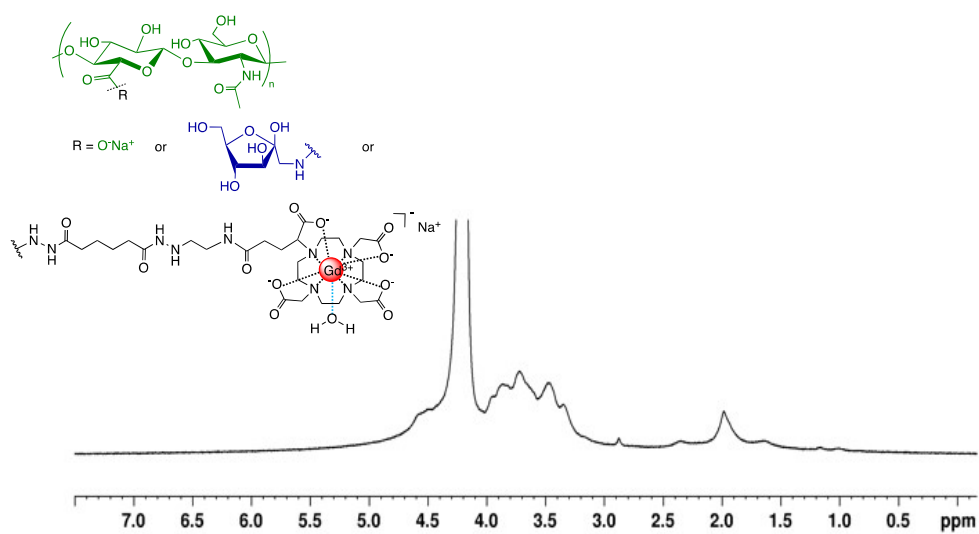
Figure S1.  $^1\text{H}$  NMR spectrum (400 MHz,  $\text{D}_2\text{O}$ , 6 mg/mL, 80 °C) of HA-PBA.



**Figure S2.** DEPT-ed-HSQC spectrum (500 MHz, D<sub>2</sub>O, 11 mg.mL<sup>-1</sup>, 80 °C) of HA-fructose. Of note, β-D-fructopyranose is the major tautomeric form observed for grafted fructose moieties, followed by the β-D-fructofuranose form.

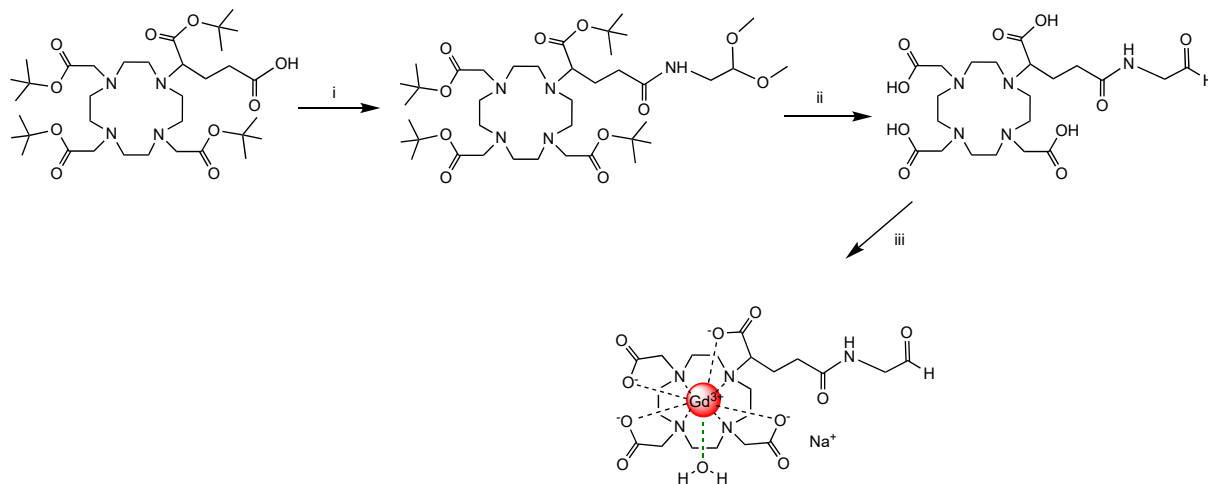


**Figure S3.** <sup>1</sup>H NMR spectrum (400 MHz, D<sub>2</sub>O, 6 mg/mL, 80 °C) of HA-Fru-ADH.



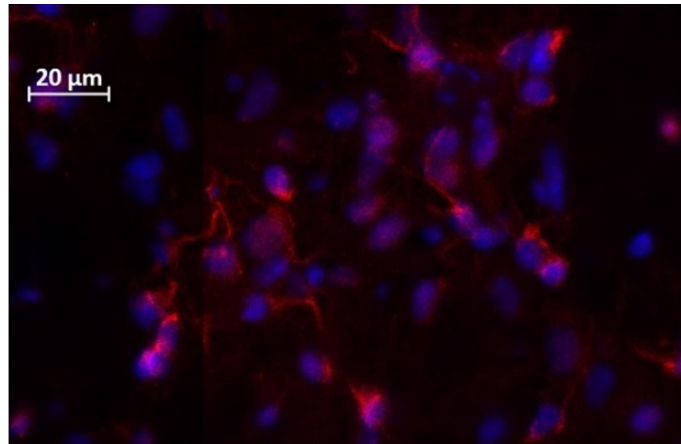
**Figure S4.** <sup>1</sup>H NMR spectrum (400 MHz, D<sub>2</sub>O, 6 mg/mL, 80 °C) of HA-Fru-GdDOTA.

## 2. Synthesis of GdDOTAGA-CHO

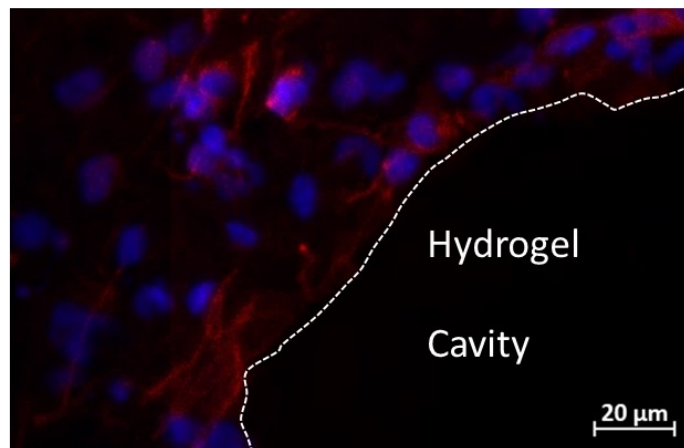


**Scheme S1.** Synthesis of DOTAGA-CHO: i: HATU, DIEA, dimethoxyethylamine, CH<sub>2</sub>Cl<sub>2</sub>/DMF, RT; ii: TFA/CH<sub>2</sub>Cl<sub>2</sub> 3:1, v/v, RT; iii: GdCl<sub>3</sub>·6H<sub>2</sub>O, water (pH 5), 40 °C.

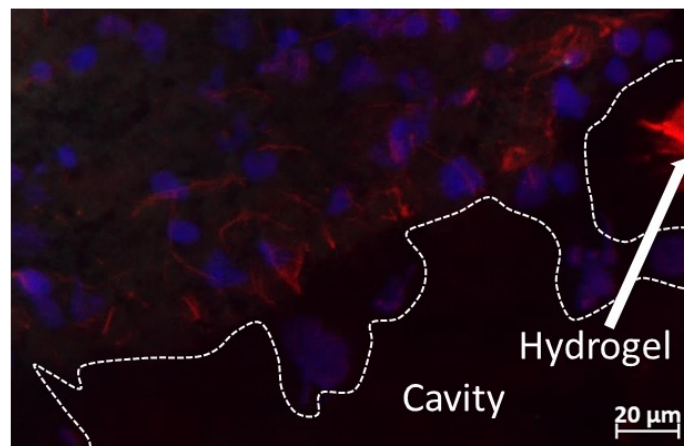
A.



B.



C.



**Figure S5.** Representative images of Iba-1stained rat brain sections. A) Iba1+ cell morphology in rat brain tissue. B) Iba1+ cell morphology in rat brain tissue at the edge of the cavity produced by injection of the control hydrogel (HA-ref hydrogel). C) Iba1+ cell morphology in rat brain tissue at the edge of the cavity produced by injection of the Gadolinium hydrogel (HA-GdDOTA hydrogel). Blue, DAPI; Red, Iba1