

Supplemental Data

Hydrogel Delivery Device for the In Vitro and In Vivo Sustained Release of Active rhGALNS Enzyme

Michael Flanagan ¹, Qi Gan ¹, Saahil Sheth ², Rachel Schafer ³, Samuel Ruesing ², Linda E. Winter ¹, Karoly Toth ⁴, Silviya P. Zustiak ^{2,*} and Adriana M. Montano ^{1,5,*}

¹ Department of Pediatrics, School of Medicine, Saint Louis University, St. Louis, MO 63104, USA

² Department of Biomedical Engineering, Saint Louis University, St. Louis, MO 63103, USA

³ School of Medicine, Saint Louis University, St. Louis, MO 63104, USA

⁴ Department of Microbiology and Molecular Immunology, School of Medicine, Saint Louis University, St. Louis, MO 63104, USA

⁵ Department of Biochemistry and Molecular Biology, School of Medicine, Saint Louis University, St. Louis, MO 63104, USA

* Correspondence: silviya.zustiak@slu.edu (S.P.Z.); adriana.montano@health.slu.edu (A.M.M.)

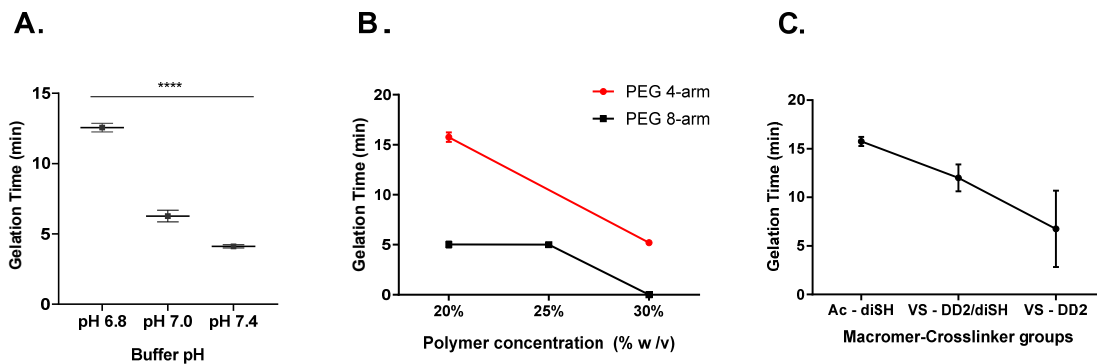


Figure S1: Effect of pH, polymer concentration and macromer:crosslinker on gelation time after mock subcutaneous injection (A) Hydrogel gelation time as a function of buffer pH for the hydrogel precursor solution. Hydrogels were prepared with 8-arm PEG-Ac macromer and PEG-diSH crosslinker and were 20% w/v in total polymer concentration. (B) Hydrogel gelation time as a function of polymer concentration. Hydrogels were prepared with PEG-diSH crosslinker at buffer pH 7.4. (C) Hydrogel degradation time as a function of macromer to crosslinker reactive groups. Hydrogels were prepared with 8-arm PEG-Ac macromer at pH 7.4 and were 20% w/v in total polymer concentration. Precursor solution was injected through a syringe needle prior to determining gelation time via inverted tube. Data are mean \pm SD, n=4-8. **** $p \leq 0.0001$

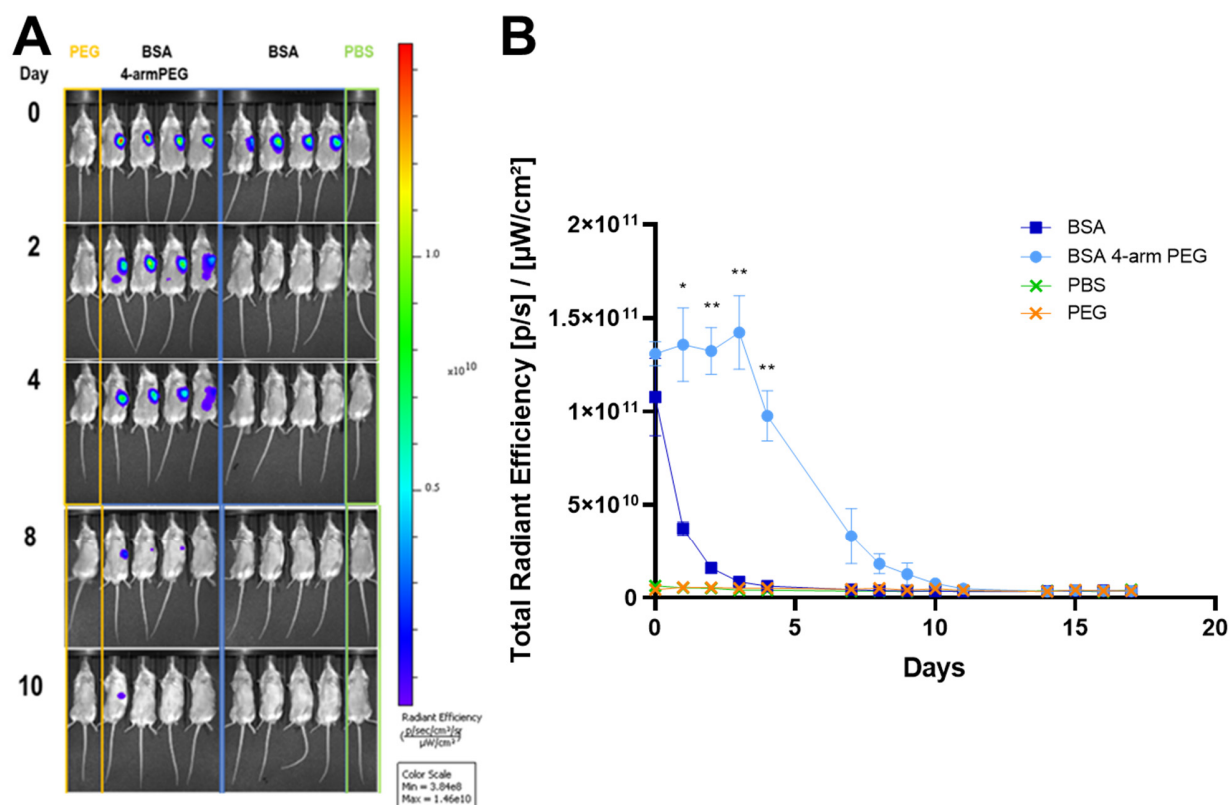


Figure S2: Representative whole body *in vivo* fluorescence images of live C57BL/6 albino mice with (A,B) non-encapsulated (n=4) or encapsulated (n=4) labeled-BSA in 4-arm PEG-Ac hydrogels. BSA at a dose of 10 mg/kg BW was administered subcutaneous (sub-Q) at day zero. Images were taken daily until 11 days post sub-Q injection.