## Haematologica HAEMATOL/2016/148106 Version 3

Genetic inactivation of calpain-1 attenuates pain sensitivity in a humanized mouse model of sickle cell disease

Jennifer O. Nwankwo, Jianxun Lei, Jian Xu, Alicia Rivera, Kalpna Gupta, and Athar H. Chishti

Disclosures: All authors declare no competing financial interests.

Contributions: J.O.N. designed and performed breeding and hematology measurement experiments and wrote the manuscript; J.L., behavioral pain testing, data analyses and manuscript editing; J.X design of the strategy to develop calpain-1 knockout sickle mice and manuscript editing; A.R., complete blood count analysis and manuscript editing; KG., design and supervision of behavioral pain studies, phenotyping of mice for hemoglobins, data analyses, and manuscript editing; A.H.C., conception of the role of calpains in sickle cell disease, calpain-1 knockout in sickle mice, supervision of the study, and manuscript writing and editing.