## Haematologica HAEMATOL/2016/151100 Version 3 T cells in chronic lymphocytic leukemia display dysregulated expression of immune checkpoints and activation markers

## Marzia Palma, Giusy Gentilcore, Kia Heimersson, Fariba Mozaffari, Barbro Näsman-Glaser, Emma Young, Richard Rosenquist, Lotta Hansson, Anders Österborg, and Håkan Mellstedt

Disclosures: The Authors declare no competing financial interests.

Contributions: MP designed and planned the research, collected samples, collected, analyzed and interpreted the data, performed the statistical analysis and wrote the manuscript. GG designed and planned the research, performed the experiments and analyzed the data. KH designed and planned the research, performed the experiments and analyzed the data. FM performed the experiments and analyzed the data. FM performed the data. EY and RR performed the IGHV mutational analysis. LH collected samples, interpreted the data, wrote the manuscript and obtained funding. HM interpreted the data, wrote the manuscript and obtained funding.