

Haematologica
HAEMATOL/2017/178608
Version 4

Hypoxia modulates the purine salvage pathway and decreases red blood cell and supernatant levels of hypoxanthine during refrigerated storage

Travis Nemkov, Kaiqi Sun, Julie A. Reisz, Anren Song, Tatsuro Yoshida, Andrew Dunham, Matthew J. Wither, Richard O. Francis, Robert C. Roach, Monika Dzieciatkowska, Stephen C. Rogers, Allan Doctor, Anastasios Kriebardis, Marianna Antonelou, Issidora Papassideri, Carolyn Young, Tiffany Thomas, Kirk C. Hansen, Steven L. Spitalnik, Yang Xia, James C. Zimring, Eldad A. Hod, and Angelo D'Alessandro

Disclosures: TY and ADu are employed by New Health Sciences Inc. ADA and SLS are consultants for New Health Sciences Inc. Hypoxically stored human packed RBCs tested in this study at different controlled SO₂ levels were generated in vented chambers (not through Hemanext - NHSi technology). TN, KCH, ADA are founders of Omix Technologies Inc. JCZ serves on the scientific advisory board for Rubius Therapeutics.

Contributions: TN, JAR, KCH, MJW, ADA performed UHPLC-MS analyses. TN, KS, AS, TY, ADu, TT, YX, ADA designed/performed/interpreted hypoxic steady state and tracing experiments. CY, TY and ADu measured SO₂ in freshly donated units. TN, KS, AS, RCR, YX, ADA performed in vivo hypoxic experiments. MD, KCH performed proteomics experiments. JAR, AK, MA, IP, MJW, SCR, ADo, JCZ, ADA performed G6PD deficient experiments. JAR, ROF, SLS, JCZ, EAH, ADA performed metabolomics analyses and correlations to 24h post-transfusion recovery in mice and humans. SR, ADo, JAR, ADA performed oxidative stress experiments. ADA prepared figures and wrote the first draft of the manuscript and all the Authors contributed to the final version.