



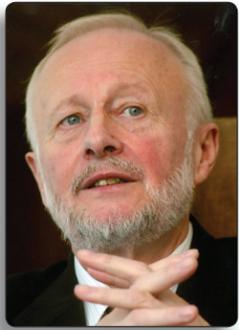
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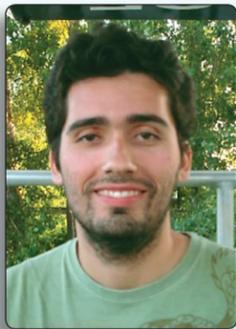
Institut Lady Davis de recherches médicales | Lady Davis Institute for Medical Research

PAPER OF THE MONTH • MARCH 2018



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Inhibition of heme oxygenase ameliorates anemia and reduces iron overload in a β -thalassemia mouse model

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Thalassemias are a serious form of red blood cell disorders, in which a genetic mutation causes decreased production of hemoglobin. Among genetic disorders, they rank as a major cause of mortality and morbidity, for which there is no optimal treatment or cure available. This paper represents the first investigation of heme oxygenase (HO) as a potential target for thalassemia therapy. It was featured in *This Week in Blood*, a snapshot of the hottest studies from each week's issue, hand-picked by Editor-in-Chief of *Blood*.

Dr. Ponka's lab looked at HO-1, the enzyme that destroys heme and releases potentially toxic iron from this pigment in developing red cells. These investigators hypothesized that HO in excess could damage thalassemic cells. They have confirmed their hypothesis by showing that blocking the degradation of heme with an inhibitor of HO-1 reduces toxicity and significantly improves 'well-being' of red cells in an animal model of thalassemia. Importantly, this study has also generated unexpected results. Red cells, after their 120-day sojourn in the circulation, are engulfed by macrophages, a type of white blood cell that recycle hemoglobin iron. Administration of a HO-1 inhibitor to thalassemic animals decreases the amount of iron available for erythropoiesis, consequently ameliorating ineffective erythropoiesis characterized by premature death of developing red cells in the marrow. This double-punch strategy stands out as an alternative and advantageous approach for treatment of thalassemia compared to other current procedures, and deserves further investigation.

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