



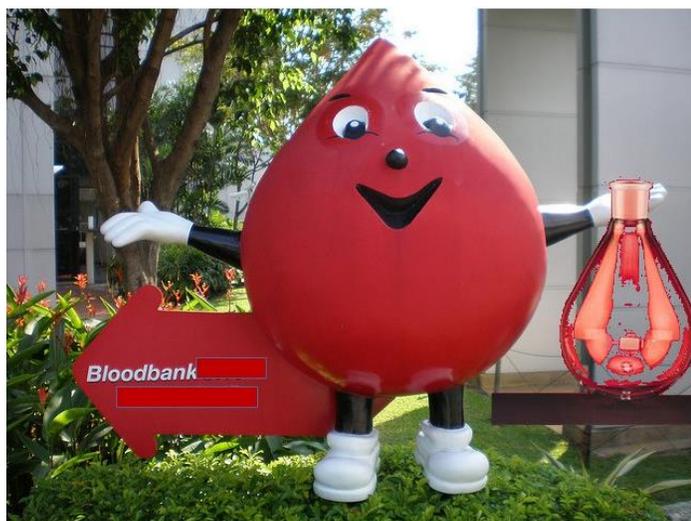
Chemical & Physical Sciences
UNIVERSITY OF TORONTO
MISSISSAUGA

COLLOQUIUM
TUESDAY, 14 OCTOBER 2014
12:00 NOON – 1:00 PM
IB280

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Hemoglobin + Chemistry = A Substitute for Red Cells in Transfusions



In modern medicine, blood transfusions are produced by combining red cells (isolated from donors with a proper blood type) and a sterile salt solution. The red cells must be stored under carefully controlled conditions. They expire after about 40 days in storage. There are situations where an alternative to red cells could be of great value. Ideally that material would be sterile, independent of blood type, and long-lasting. The main function of red cells is transporting oxygen and it is the small protein, hemoglobin, within red

cells that acquires oxygen in the lungs and releases it throughout the circulatory system. Hemoglobin itself cannot replace red cells because it does not survive in circulation and it can also cause dangerous increases in blood pressure. To overcome those problems, we have designed and tested chemicals that produce changes into hemoglobin that make it appropriate as a red cell substitute for hemoglobin. We will look into how hemoglobin functions, what we look for in potential red cell substitutes, how we make them chemically from hemoglobin and how they are tested.