

Erythrocytes of the Rhesus and Cynomolgus Monkeys
Chester A. Glomski, Alessandra Pica,
Jessica F. Greene, 2019
CRC Press, Boca Raton
DOI: <https://doi.org/10.1201/b19221>
ISBN: 9780367377038
eBook ISBN 9780429189982
Pages: 254 +XV; € 113,80

The monograph *Erythrocytes of the Rhesus and Cynomolgus Monkeys* is devoted to the cytologic, quantitative, generative normal and abnormal presentations of the erythrocytes in these two species of primates. These monkeys (*Macaca mulatta* and *Macaca fascicularis*) are the most commonly utilized nonhuman primates in basic science and clinical medicine investigation. The erythropoietic profiles of normal and abnormal macaques of both sexes and age groups as derived by contemporary electronic technology are addressed. In the analyses the erythrocyte-dependent quanta, *i.e.*, the hemoglobin concentration of the blood, hematocrit, mean erythrocellular volume, mean cellular content of hemoglobin, and the mean concentration of hemoglobin in a given red blood cell are included. The effect of stress upon a monkey and resultant modification of the erythrocyte count and other erythrogramic values are specifically evaluated. The role of training rhesus monkeys to voluntarily cooperate in phlebotomies and the use of the sedative ketamine to yield acceptable erythrocytic

data are scientifically assessed. The occurrence of reticulocytes, denucleated but nevertheless not-quite-mature erythrocytes, in the circulating blood of both macaques is considered in depth. The cytochemical and developmental bases for their existence, their identification under routine microscopy and electronic methodology, and their fluctuable presence in the blood under various conditions are analyzed. The erythroid blood picture of pregnant *M. mulatta* and *M. fascicularis* are amply evaluated. Erythropoiesis in the bone marrow is covered in detail.

The text presents the morphologic description of the maturational sequence of the erythrocyte, beginning with the pronormoblast and continuing on through the basophilic, polychromatophilic and orthochromic normoblast. Bone marrow erythroid differential counts as reported in various investigations are included. The often unrecognized erythroblastic islets are identified in the *rhesus* bone marrow. Photomicrographs of them in Wright-stained dry films document their existence. The organization of these cellular niches, *i.e.*, clusters of normoblasts surrounding a central macrophage, and their functional activities are furthermore investigated. Megaloblasts, an abnormal lineage of developing erythrocytes, with specific morphologic features that permit their ready identification in Wright-stained smears of blood and bone marrow are discussed (and

illustrated) in detail. The experimental development of megaloblastic anemia in rigorously controlled vitamin-C-deficient rhesus monkeys is also presented. The derivation of the life span of erythrocytes of the rhesus monkey by labeling them with radioactive chromium or diisopropyl fluorophosphate is embraced by the text. The unique simultaneous determination of the half life spans of two different populations of red cells in the blood labeled with the same physiological isotope, radioactive chromium-51 and stable non-radioactive chromium-50 is discussed. Other erythrocyte related topics that are brought to the fore, among others, include the blood volume of the monkey, simian immunodeficiency virus and its relationship with erythropoiesis, and various anemias (such as that associated with babesiosis and malaria), and osmotic fragility of the red cell.

The information offered in the text is suitably supported by multiple tabular data and an extensive bibliography.

This monograph is devoted to biologists, veterinarians and all those interested in learning more about comparative hematology.

Vincenzo Stingo
 Department of Environmental, Biological,
 and Pharmaceutical Sciences and Technologies
 University of Campania
 "Luigi Vanvitelli"