Regulation of erythropoietin production
Erythropoietin is the primary regulator of erythropoiesis and red blood cell mass. Erythropoietin action is mediated by its binding to plasma cell membrane receptors of erythroid progenitors and precursors. The sensitivity of erythroid progenitors to erythropoietin appears to be under developmental regulation. Colony-forming unit erythroid (CFU-E) and proerythroblasts have a peak amount of erythropoietin receptors. In peripheral reticulocytes, the receptors are undetectable. Erythropoietin, also known as hematopoietin or hemopoietin, is a glycoprotein cytokine secreted by the kidney in response to cellular hypoxia; it stimulates red blood cell production (erythropoiesis) in the bone marrow. Low levels of EPO (around 10 mU/mL) are constantly secreted sufficient to compensate for normal red blood cell turnover. Common causes of cellular hypoxia resulting in elevated levels of EPO (up to 10 000 mU/mL) include any anemia, and hypoxemia due to chronic lung disease.