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Titolo	Thermodynamics and Equilibria in Earth System Sciences: An Introduction / / by Jack J. Middelburg
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2024
ISBN	9783031534072
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (91 pages)
Collana	SpringerBriefs in Earth System Sciences, , 2191-5903
Disciplina	551.9
Soggetti	Geochemistry Thermodynamics Geology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- The First Law: Work, Heat and Thermochemistry -- Entropy and the Second Law -- The Gibbs Free Energy -- Introduction to Equilibrium -- Acid-base Equilibria -- Redox Equilibria.
Sommario/riassunto	Thermodynamics is needed to understand many processes on Earth, be they physical, chemical, or biological. Thermodynamics is critical to study the atmosphere (lapse rate, fohn winds, circulation), hydrosphere (latent and sensible heat, pressure dependence of freezing/boiling points), geosphere (geothermal gradients, mineral stability) and the biosphere (redox zonation, evolution of biogeochemical cycles). This introduction to thermodynamics and equilibria aims to provide the basic concepts of relevance for atmospheric, marine, climate, and environmental sciences and to prepare students for more advanced classes in physical chemistry, mineralogy, and petrology. This is an open access book.

2. Record Nr.	UNINA9911019565303321
Autore	Mead Adam J
Titolo	Hoffbrand's Postgraduate Haematology
Pubbl/distr/stampa	Newark : , : John Wiley & Sons, Incorporated, , 2025 ©2025
ISBN	9781119706687 1119706688 9781119706670 111970667X 9781119706663 1119706661
Edizione	[8th ed.]
Descrizione fisica	1 online resource (1107 pages)
Altri autori (Persone)	LaffanMichael A CollinsGraham P HayDeborah HoffbrandA. Victor
Disciplina	616.99/418
Soggetti	Blood Physiological Phenomena Hematologic Diseases Leukemia - blood Thrombosis - blood
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Cover -- Title Page -- Copyright Page -- Contents -- About the editors -- Contributor's list -- Preface to the eighth edition by Adam J Mead -- Preface to the eighth edition by A Victor Hoffbrand -- Preface to the first edition -- About the companion website -- Part I General principles of haematology -- Chapter 1 Human stem cells and haemopoiesis -- Introduction -- Human haemopoietic stem cells and the haemopoietic differentiation hierarchy -- Human haemopoietic stem cell characteristics -- Assays for human haemopoiesis -- Short-term in vitro assays -- Long-term in vitro assays -- Xenotransplantation assay -- Fate-mapping -- Identification of human haemopoietic stem cells -- Development of haemopoietic stem cells --

Regulation of haemopoietic stem cells -- Fate-mapping human haemopoiesis -- Clinical relevance of haemopoietic stem cells -- Selected bibliography -- Chapter 2 Phagocytes -- Introduction -- The phagocyte lineage at a glance -- Phagocyte identification and quantification -- General phagocyte molecules and functions -- Phagocytosis -- Adhesion and chemotaxis -- Pattern recognition receptors and inflammation -- Killing via lytic enzymes and production of reactive radicals -- Phagocyte Particulars -- Neutrophils -- Eosinophils, basophils and mast cells -- Basophils and mast cells -- MPS-Monocytes, macrophages, DCs and multinucleated cells -- Disorders of the phagocyte system -- Neutrophil congenital disorders (Table 2.9) -- Disorders of monocyte/macrophages: a genetic perspective -- Conclusion -- Acknowledgements -- Selected bibliography -- Chapter 3 Erythropoiesis in the human -- Introduction -- The developmental origins of erythropoiesis -- The cellular and molecular pathways leading to definitive erythropoiesis -- Differentiation and terminal maturation. Changes in the expression of key erythroid proteins during terminal differentiation -- The erythroid niche -- The regulation of erythropoiesis by cytokines and cell signalling -- The regulation of apoptosis in erythropoiesis -- The coordination of erythropoiesis and iron metabolism -- The control of erythropoiesis via the oxygen-sensing system -- The mature red cell, senescence and clearance -- Assessing erythropoiesis -- Concluding remarks -- Selected bibliography -- Chapter 4 Lymphocyte development and function -- Introduction -- B cells -- Development -- Antibodies -- Antibody function -- Fc-Fc receptor-mediated interactions -- Complement fixation -- Neutralising activity -- The B cell receptor -- T cells -- T-cell development -- Antigen recognition by the TCR -- CD4+ and CD8+ T cells and their functions -- Differentiation of primed T cells into effector cells -- Regulatory CD4+ T cells -- The role of co-stimulatory and inhibitory molecules -- Natural killer cells -- Natural killer T cells -- The immune response in cancer and its therapy -- Interpretation of blood lymphocyte counts -- Selected bibliography -- Chapter 5 The spleen -- Structure and function of the spleen -- Splenic blood flow and the red pulp -- Blood pooling within the spleen -- Role of the spleen in ensuring quality control of red cells -- Immunological function of the spleen -- Splenomegaly and hypersplenism -- Spleen size -- Causes of splenomegaly -- Extramedullary haemopoiesis -- Haemolytic anaemia and immune cytopenias -- Infections -- Infiltration by haematological malignancies -- Non-Hodgkin lymphoma -- Hodgkin lymphoma -- Myeloid stem cell disorders -- Infiltration by non-haematological malignancies and tumour-like lesions -- Vascular congestion -- Diagnostic evaluation of splenomegaly and splenic lesions -- Management of splenomegaly -- Post splenectomy sepsis. Patient education -- Vaccination -- Antibiotics -- Changes in peripheral blood following splenectomy -- Leucocyte changes -- Platelet changes -- Hyposplenism -- Selected bibliography -- Chapter 6 Cancer immunotherapy -- Introduction -- Immune evasion and subversion in cancer -- The immune system and tumour microenvironment -- Types of immunotherapy -- Antibody therapy -- Adoptive T cell therapy -- Cancer vaccines -- Cytokine therapy -- Emerging types of immunotherapy -- Allogeneic cell therapies -- Future of immunotherapy -- Selected bibliography -- Chapter 7 Clinical applications of gene editing and therapy -- Introduction -- General principles of gene therapy -- Gene therapy in haemopoietic stem cells -- Gene therapy for thalassaemia -- Gene therapy for sickle cell disease -- Safety and efficacy concerns -- Gene therapy

for haemophilia -- Genome editing -- General principles of genome editing -- Delivery of genome editing technology -- Genome editing for the -thalassaemias and sickle cell disease -- Approaches for treating haemoglobinopathies through elevation of fetal haemoglobin levels -- Approaches for treating haemoglobinopathies through direct correction of the gene -- Safety of genome editing -- Conclusion -- Selected bibliography -- Chapter 8 Application of next-generation sequencing in haematology -- Introduction -- NGS technology -- Choice of input substrate -- Choice of assay breadth and depth -- Amplicon versus hybridization panel -- Library preparation -- Short-read technologies -- Long-read technologies -- Bioinformatic processing and interpretation of data -- Bioinformatics pipeline -- Interpretation of variants -- Utility -- Diagnostic -- Prognostic -- Therapeutic -- Measurable residual disease -- Germline predisposition -- Discovery -- Practical considerations -- Cost -- Turn-around-times -- Interpretation complexities. Ethical considerations -- The future -- Selected bibliography -- Chapter 9 The molecular basis of haematological malignancies -- Introduction -- The cancer genome -- Classes of DNA mutations -- Inherited predisposition to haematological cancers -- Acquired DNA mutations in haematological cancers -- Endogenous processes -- Exogenous processes -- From genotype to phenotype -- NOTCH-signalling and lymphoid malignancies -- Epigenetics and leukaemia -- Tyrosine kinases and myeloproliferation -- GM-CSF and RAS signalling in juvenile myelomonocytic leukaemia -- Other Ras pathway mutations in haematological malignancies -- The P53 network -- Splicing factors -- Multiple myeloma -- Clonal evolution and subclonal architecture of haematological cancers -- Clonal evolution of cancer -- Impact of clonal structure on treatment and relapse -- Selected bibliography -- Chapter 10 Laboratory diagnosis of haematological neoplasms -- Introduction -- Blood count and blood film -- Bone marrow aspirate -- Bone marrow trephine biopsy -- Cytochemistry -- Histology -- Flow cytometric immunophenotyping -- Immunohistochemistry -- Cytogenetic analysis -- Fluorescence in situ hybridisation -- Molecular genetic analysis -- Whole-genome scanning -- Microarray analysis of gene expression -- Next-generation sequencing -- Laboratory techniques and the WHO classification of tumours of haemopoietic and lymphoid tissues -- Conclusions -- Selected bibliography -- Part II Red blood cell disorders and blood transfusion -- Chapter 11 Iron metabolism, iron deficiency and disorders of haem synthesis -- Introduction -- Distribution of body iron -- Proteins important in iron metabolism -- Haem proteins and iron-containing enzymes -- Ferritin and haemosiderin -- Divalent metal transporter 1 -- Ferroportin -- Other proteins -- Hepcidin -- Erythroferrone -- Matriptase-2. Intracellular iron homeostasis -- Normal iron balance -- Iron absorption -- Iron uptake by erythroid cells -- Haem synthesis and mitochondrial iron metabolism -- Intracellular transit iron and plasma non-transferrin-bound iron -- Breakdown of haemoglobin and iron recycling -- Diagnostic methods for investigating iron metabolism -- Serum ferritin -- Bone marrow aspiration -- Serum iron and iron-binding capacity -- Serum transferrin receptors -- Red cell protoporphyrin -- Percentage of hypochromic red cells -- Reticulocyte haemoglobin content -- Iron deficiency -- Absolute iron deficiency -- Iron deficiency anaemia -- Functional iron deficiency -- Anaemia of inflammation -- Tissue effects of iron deficiency -- Causes of absolute iron deficiency -- Causes of anaemia of inflammation -- Features of the anaemia of inflammation -- Management of iron deficiency -- Oral iron therapy -- Parenteral iron therapy --

Pathological alterations in haem synthesis -- Porphyrrias -- Congenital erythropoietic porphyria -- Erythropoietic protoporphyria -- Porphyrria cutanea tarda -- Lead poisoning -- Sideroblastic anaemia -- Inherited sideroblastic anaemias -- Defective haem synthesis -- Mutations of proteins of the iron-sulfur cluster biogenesis -- Syndromic forms of sideroblastic anaemia -- Defective mitochondria respiratory chain -- Acquired sideroblastic anaemia -- Selected bibliography -- Chapter 12 Iron overload -- Introduction -- Hereditary haemochromatosis -- HFE haemochromatosis -- Body iron quantitation -- Non-HFE haemochromatosis -- Rare genetic causes of iron overload associated with anaemia -- Atransferrinaemia -- DMT1 deficiency -- Acaeruloplasminaemia -- Other causes of iron overload -- Hereditary hyperferritinaemia-cataract syndrome -- Iron-loading anaemias -- Tests of body iron burden -- Serum ferritin -- Liver iron -- Cardiac iron -- Urine iron excretion. Non-transferrin-bound iron.

Sommario/riassunto

"The book was not intended as a reference tome but as an easily read text from which to learn about the blood diseases -their pathogenesis, clinical and laboratory features, relevant diagnostic tests, treatment and prognosis. A suggested reading list was given at the end of each chapter but references in the text were avoided. The title Postgraduate Haematology was adopted for the second and subsequent editions, published by William Heinemann, Butterworth Heinemann, Arnold, Oxford University Press, Blackwell and now Wiley-Blackwell"--
