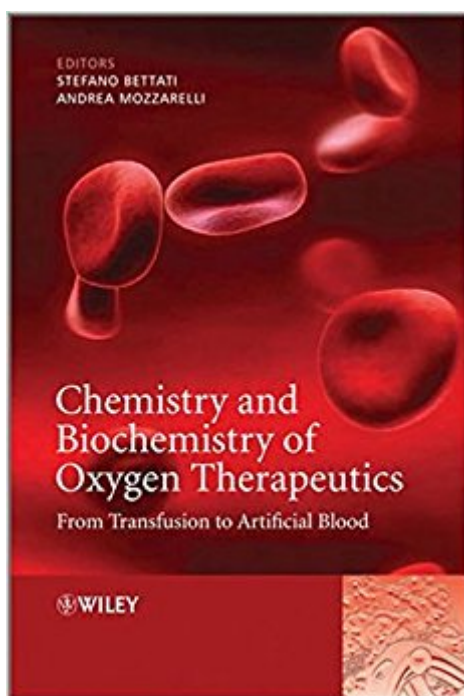




The book was found

# Chemistry And Biochemistry Of Oxygen Therapeutics: From Transfusion To Artificial Blood



## Synopsis

Human blood performs many important functions including defence against disease and transport of biomolecules, but perhaps the most important is to carry oxygen – the fundamental biochemical fuel - and other blood gases around the cardiovascular system. Traditional therapies for the impairment of this function, or the rapid replacement of lost blood, have centred around blood transfusions. However scientists are developing chemicals (oxygen therapeutics, or “blood substitutes”) which have the same oxygen-carrying capability as blood and can be used as replacements for blood transfusion or to treat diseases where oxygen transport is impaired.

*Chemistry and Biochemistry of Oxygen Therapeutics: From Transfusion to Artificial Blood* links the underlying biochemical principles of the field with chemical and biotechnological innovations and pre-clinical development. The first part of the book deals with the chemistry, biochemistry, physiology and toxicity of oxygen, including chapters on hemoglobin reactivity and regulation; the major cellular and physiological control mechanisms of blood flow and oxygen delivery; hemoglobin and myoglobin; nitric oxide and oxygen; and the role of reactive oxygen and nitrogen species in ischemia/reperfusion injury. The book then discusses medical needs for oxygen supply, including acute traumatic hemorrhage and anemia; diagnosis and treatment of haemorrhages in "non-surgical" patients; management of perioperative bleeding; oxygenation in the preterm neonate; ischemia normobaric and hyperbaric oxygen therapy for ischemic stroke and other neurological conditions; and transfusion therapy in thalassemia and sickle cell disease. Finally “old” and new strategies for oxygen supply are described. These include the political, administrative and logistic issues surrounding transfusion; conscientious objection in patient blood management; causes and consequences of red cell incompatibility; biochemistry of red blood cell storage; proteomic investigations on stored red blood cells; red blood cells from stem cells; the universal red blood cell; allosteric effectors of hemoglobin; hemoglobin-based oxygen carriers; oxygen delivery by natural and artificial oxygen carriers; cross-linked and polymerized hemoglobins as potential blood substitutes; design of novel pegylated hemoglobins as oxygen carrying plasma expanders; hb octamers by introduction of surface cysteines; hemoglobin-vesicles as a cellular type hemoglobin-based oxygen carrier; animal models and oxidative biomarkers to evaluate pre-clinical safety of extracellular hemoglobins; and academia – industry collaboration in blood substitute development. *Chemistry and Biochemistry of Oxygen Therapeutics: From Transfusion to Artificial Blood* is an essential reference for clinicians, haematologists, medicinal chemists, biochemists, molecular biologists, biotechnologists and blood substitute researchers.

## Book Information

Hardcover: 466 pages

Publisher: Wiley; 1 edition (September 13, 2011)

Language: English

ISBN-10: 0470686685

ISBN-13: 978-0470686683

Product Dimensions: 6.8 x 1.1 x 9.9 inches

Shipping Weight: 2.1 pounds (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #768,417 in Books (See Top 100 in Books) #107 in [Books > Textbooks >](#)

[Medicine & Health Sciences > Allied Health Services > Respiratory Therapy](#) #156 in [Books >](#)

[Medical Books > Allied Health Professions > Respiratory Therapy](#) #1000 in [Books >](#)

[Engineering & Transportation > Engineering > Bioengineering > Biochemistry](#)

## Customer Reviews

Human blood performs many important functions including defence against disease and transport of biomolecules, but perhaps the most important is to carry oxygen - the fundamental biochemical fuel - and other blood gases around the cardiovascular system. Traditional therapies for the impairment of this function, or the rapid replacement of lost blood, have centred around blood transfusions.

However scientists are developing chemicals (oxygen therapeutics, or "blood substitutes") which have the same oxygen-carrying capability as blood and can be used as replacements for blood transfusion or to treat diseases where oxygen transport is impaired."Chemistry and Biochemistry of Oxygen Therapeutics: From Transfusion to Artificial Blood" links the underlying biochemical principles of the field with chemical and biotechnological innovations and pre-clinical development. The first part of the book deals with the chemistry, biochemistry, physiology and toxicity of oxygen, including chapters on hemoglobin reactivity and regulation; the major cellular and physiological control mechanisms of blood flow and oxygen delivery; hemoglobin and myoglobin; nitric oxide and oxygen; and the role of reactive oxygen and nitrogen species in ischemia/reperfusion Injury. The book then discusses medical needs for oxygen supply, including acute traumatic hemorrhage and anemia; diagnosis and treatment of haemorrhages in "non-surgical" patients; management of perioperative bleeding; oxygenation in the preterm neonate; ischēmianormobaric and hyperbaric oxygen therapy for ischemic stroke and other neurological conditions; and transfusion therapy in [thalassemia](#) and sickle cell disease. Finally "old" and new

strategies for oxygen supply are described. These include the political, administrative and logistic issues surrounding transfusion; conscientious objection in patient blood management; causes and consequences of red cell incompatibility; biochemistry of red blood cell storage; proteomic investigations on stored red blood cells; red blood cells from stem cells; the universal red blood cell; allosteric effectors of hemoglobin; hemoglobin-based oxygen carriers; oxygen delivery by natural and artificial oxygen carriers; cross-linked and polymerized hemoglobins as potential blood substitutes; design of novel pegylated hemoglobins as oxygen carrying plasma expanders; hb octamers by introduction of surface cysteines; hemoglobin-vesicles as a cellular type hemoglobin-based oxygen carrier; animal models and oxidative biomarkers to evaluate pre-clinical safety of extracellular hemoglobins; and academia - industry collaboration in blood substitute development."Chemistry and Biochemistry of Oxygen Therapeutics: From Transfusion to Artificial Blood" is an essential reference for clinicians, haematologists, medicinal chemists, biochemists, molecular biologists, biotechnologists and blood substitute researchers.

[Download to continue reading...](#)

Chemistry and Biochemistry of Oxygen Therapeutics: From Transfusion to Artificial Blood BLOOD TYPE DIET : Eat recipes according to blood type(blood diet,blood type diet o,blood type diet b,blood type cookbook,blood type a diet,blood type a cookbook,blood type ab,blood type book) Modern Blood Banking & Transfusion Practices (Modern Blood Banking and Transfusion Practice) Ace Biochemistry!: The EASY Guide to Ace Biochemistry: (Biochemistry Study Guide, Biochemistry Review) The Oxygen Revolution: Hyperbaric Oxygen Therapy: The New Treatment for Post Traumatic Stress Disorder (PTSD), Traumatic Brain Injury, Stroke, Autism and More The Oxygen Revolution, Third Edition: Hyperbaric Oxygen Therapy: The Definitive Treatment of Traumatic Brain Injury (TBI) & Other Disorders The Oxygen Cure: A Complete Guide to Hyperbaric Oxygen Therapy Blood Pressure: High Blood Pressure, Its Causes, Symptoms & Treatments for a long, healthy life.: Plus 9 Free Books Inside. (Blood Pressure, High Blood ... Hypertension, Blood Pressure Solutions.) Nitrogen, Oxygen and Sulfur Ylide Chemistry (The Practical Approach in Chemistry Series) Comprehensive Heterocyclic Chemistry : Comprehensive Heterocyclic Chemistry, Five-Membered Rings with Oxygen, Sulfur or Two or More Nitrogen Atoms Pharmacology and Therapeutics for Dentistry, 4e (Pharmacology & Therapeutics for Dentistry) Textbook of Therapeutics: Drug and Disease Management (Helms, Textbook of Therapeutics) Applied Therapeutics: The Clinical Use of Drugs (APPLIED THERAPEUTICS (KODA-KIMBLE)) Basic & Applied Concepts of Blood Banking and Transfusion Practices, 4e Clinical Laboratory Blood Banking and Transfusion Medicine Practices (Pearson Clinical Laboratory Science) Modern Blood Banking & Transfusion Practices

Blood Pressure: Blood Pressure Solution : The Ultimate Guide to Naturally Lowering High Blood Pressure and Reducing Hypertension (Blood Pressure Series Book 1) Blood Pressure: Blood Pressure Solution: 54 Delicious Heart Healthy Recipes That Will Naturally Lower High Blood Pressure and Reduce Hypertension (Blood Pressure Series Book 2) Blood Pressure Solution: 30 Proven Natural Superfoods To Control & Lower Your High Blood Pressure (Blood Pressure Diet, Hypertension, Superfoods To Naturally Lower Blood Pressure Book 1) High Blood Pressure Cure: How To Lower Blood Pressure Naturally in 30 Days (Alternative Medicine, Natural Cures, Natural Remedies, High Blood Pressure ... Cures for High Blood Pressure, High BI)

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)