

Jan van der Meer & Greg N Stephanopoulos, Editors



**June 2013**

**Energy biotechnology**

Edited by Eric Toone and Han de Winde

**Environmental biotechnology**

Edited by Robert J Steffan and Juan Luis Ramos

**August 2013** Nanobiotechnology • Systems biology

**October 2013** Tissue, cell and engineering

**December 2013** Chemical biotechnology • Pharmaceutical biotechnology

**February 2014** Analytical biotechnology

**May 2014** Food biotechnology • Plant biotechnology

1

6

1

online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

Access **COBT** articles online up to one month before  
they appear in your print journal [www.sciencedirect.com](http://www.sciencedirect.com)

**CURRENT  
OPINION**  
[www.current-opinion.com](http://www.current-opinion.com)





ELSEVIER

## CONTENTS

Abstracted/indexed in: BIOSIS, CAB Abstracts International, CAB Health, Chemical Abstracts, EMBASE, Index Medicus, Medline. Also covered in the abstract and citation database SciVerse SCOPUS®. Full text available on SciVerse ScienceDirect®

### Energy biotechnology

Edited by Eric Toone and Han de Winde

- 367 **Eric Toone and Han de Winde**  
Editorial overview: Energy biotechnology in 2013: advanced technology development for breakthroughs in fuels and chemicals production
- 369 **Brian Borak, Donald R Ort and Jonathan J Burbaum**  
Energy and carbon accounting to compare bioenergy crops
- 376 **Aaron S Hawkins, Patrick M McTernan, Hong Lian, Robert M Kelly and Michael WW Adams**  
Biological conversion of carbon dioxide and hydrogen into liquid fuels and industrial chemicals
- 385 **Derek R Lovley and Kelly P Nevin**  
Electrobiocommodities: powering microbial production of fuels and commodity chemicals from carbon dioxide with electricity
- 391 **Christopher W Marshall, Edward V LaBelle and Harold D May**  
Production of fuels and chemicals from waste by microbiomes
- 398 **Jens Nielsen, Christer Larsson, Antonius van Maris and Jack Pronk**  
Metabolic engineering of yeast for production of fuels and chemicals
- 405 **René H Wijffels, Olaf Kruse and Klaas J Hellingwerf**  
Potential of industrial biotechnology with cyanobacteria and eukaryotic microalgae
- 414 **Sascha Kersten and Manuel Garcia-Perez**  
Recent developments in fast pyrolysis of ligno-cellulosic materials

### Environmental biotechnology

Edited by Robert J Steffan and Juan Luis Ramos

- 421 **Robert J Steffan and Juan Luis Ramos**  
Editorial overview: Environmental biotechnology
- Biodegradation of pollutants*
- 423 **Hideaki Nojiri**  
Impact of catabolic plasmids on host cell physiology
- 431 **Eduardo Díaz, José Ignacio Jiménez and Juan Nogales**  
Aerobic degradation of aromatic compounds
- 443 **Michael Hyman**  
Biodegradation of gasoline ether oxygenates

#### *Factors impacting biodegradation and bioremediation*

- 451 **Tino Krell, Jesús Lacal, Jose Antonio Reyes-Darias, Celia Jimenez-Sanchez, Rungroch Sungthong and Jose Julio Ortega-Calvo**  
Bioavailability of pollutants and chemotaxis

- 457 **Jie Ma, William G Rixey and Pedro JJ Alvarez**  
Microbial processes influencing the transport, fate and groundwater impacts of fuel ethanol releases

- 467 **Ana Segura and Juan Luis Ramos**  
Plant-bacteria interactions in the removal of pollutants

#### *Bioremediation in the environment*

- 474 **Che Ok Jeon and Eugene L Madsen**  
*In situ* microbial metabolism of aromatic-hydrocarbon environmental pollutants
- 482 **Kevin R Sowers and Harold D May**  
*In situ* treatment of PCBs by anaerobic microbial dechlorination in aquatic sediment: are we there yet?
- 489 **Kenneth H Williams, John R Bargar, Jonathan R Lloyd and Derek R Lovley**  
Bioremediation of uranium-contaminated groundwater: a systems approach to subsurface biogeochemistry

#### *Modern approaches for studying biodegradation and bioremediation*

- 498 **Ruth Ellen Richardson**  
Genomic insights into organohalide respiration
- 506 **Amy V Callaghan**  
Metabolomic investigations of anaerobic hydrocarbon-impacted environments
- 516 **Anna Lewin, Alexander Wentzel and Svein Valla**  
Metagenomics of microbial life in extreme temperature environments

#### *Advanced tools for studying biodegradation and bioremediation*

- 526 **Terry C Hazen, Andrea M Rocha and Stephen M Techtman**  
Advances in monitoring environmental microbes
- 534 **Davide Merulla, Nina Buffi, Siham Beggah, Frédéric Truffer, Martial Geiser, Philippe Renaud and Jan Roelof van der Meer**  
Bioreporters and biosensors for arsenic detection. Biotechnological solutions for a world-wide pollution problem
- 542 **Paul B Hatzinger, JK Böhlke and Neil C Sturchio**  
Application of stable isotope ratio analysis for biodegradation monitoring in groundwater

### The cover

Development of microbial-based *in situ* treatments of environments impacted with persistent organic compounds such as PCBs are currently under development. These approaches have the potential to provide a cost-effective and environmentally sustainable alternative to dredging by reducing the health risks associated with sediment disruption, reducing overall energy use, and negating the requirement for extensive waste management and substantial habitat restoration. (Illustration created by Kevin Sowers.)