



GDR: Biological and Biomimetic pathways for synthesis and use of Hydrogen



http://www.bioh2.cnrs-mrs.fr/gb_index.php

Director: Marc Rousset CNRS

Deputy Director: Laurent Cournac CEA





44 Groups from 22 Laboratories

CNRS, CEA, INRA, IRD, INRIA,
INSA, INPT, BRGM

Universities: Marseille, Montpellier,
Toulouse, Nice, Grenoble, Clermont-
Ferrand, Nantes, Orsay, Brest, Lille



Interdisciplinarity



microbiology, molecular biology,

biochemistry,

metabolic engineering,

crystallography,

process, modelisation,

computing,

chemistry and spectroscopy



GDR Scientific objectives

- 1 - Comparison and selection of bacterial strains producing hydrogen
- 2 - Understanding of the role of the hydrogenase enzymes in energy metabolism
- 3 - Molecular studies and optimisation of enzyme potentialities
- 4 - Conception of new catalysts
- 5 - Biocaptors and Biofuel cells
- 6 - Biological hydrogen production



Running Projects



- 1- BioH2 (2005-2008): 450 000 € (Blanc sci)**
Production of hydrogen from biomass at high yield and productivity
- 2- PhotoBioH2 (2005-2008): 727 000 € (Blanc sage)**
Production of hydrogen from renewable energies through photosynthetic and biomimetic pathways



Running Projects



3- Prométhée (2006-2009): 763 686 €(PNRB)

Understanding and optimization of the biological production by fermentation of methane and hydrogen from the organic fraction of sewage

4- AcetoH2 (2006-2009): 414 524 €(PNRB)

Bioconversion into hydrogen of sugars derived from cellulose and hemicellulose at high yield and purity



Running Projects



5- DIVHYDO (2006-2009): 587 000 €(PNRB)
**Diversity of hydrogenases and their reactivity
with oxygen**





New Projects



1- BIOSOLIS (2007-2010): ? €(PNRB)

Development of intensified solar photo-bioreactors for high scale production of bioenergies by photosynthetic microorganisms

2- HYLIOX (2007-2010): ? €(PNRB)

Enzyme engineering of hydrogenase for a production of photosynthetic hydrogen



New Projects



3- CatH2 (2007-2010): ? €(Blanc sci)
Synthetic and Biosynthetic Catalysts for H₂ production

4- CAFE (2007-2010): ? €(Blanc sci)
Molecular mechanism and reactivities of the complex and highly active Fe -hydrogenase from *Clostridium acetobutylicum*



Next meeting October 9-12th La Londe les Maures

