Professor Peter Lindblad - Microbial chemistry
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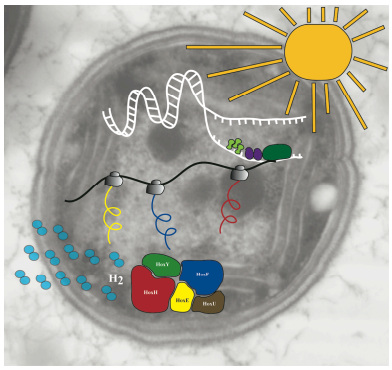
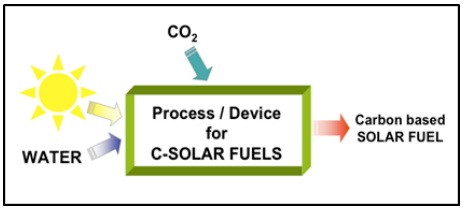
Dr Peter Lindblad, Professor in Microbial Chemistry 2009 (earlier Professor in Biology, Physiological botany 2000), explores the conversion of solar energy into a biofuel, focussing on micro-algal based H_2-production/hydrogenases, as well as carbon-containing solar fuels, at applied, physiological, biochemical and molecular levels - in total 155 scientific publications. Different molecular and genetic techniques are used to address transcriptional regulation and regulatory mechanisms. In the last years, his research group has developed a strong interest for Synthetic Biology and the possibilities to custom design and engineer microbial cells to carry out novel pathways and functions. Subsequent activities include proteomics and metabolomics - Systems biology - analyses of the constructed cells, followed by further re-design and re-engineering.



Dr Lindblad is leading one of the research groups in the Swedish program on Natural and Artificial Photosynthesis, funded by the KA Wallenberg Foundation, "Molecular Solar Energy Science - *MoSE*", 2012-16) and the Swedish Energy Agency (2012-16). He is the coordinator of the EU/FP7-Energy/FET funded project *CyanoFactory* (2012-15; **www.cyanofactory.eu**) with 10 partners in 7 countries and participates in the Nordic collaborative project *AquaFeed* (2012-15). 1999-2005 Dr Lindblad was the coordinator of the international network *Photobiological H_2 production*, Annex 15 within the International Energy Agency. Presently he participates in the follow-up IEA H2 Agreement Annex 21 *BioHydrogen*. In addition, he was coordinating two Nordic collaborative projects on *BioHydrogen* (2005-07, 2008-11), the Deputy coordinator of the EU/FP6/7-NEST/Energy projects *Solar-H* & *SolarH2* (2005-07, 2008-12), and participant in the EU/FP7-NEST project *BiomodularH2* (2009-11) and the international project *BioCO_2* (2009-12).

CyanoFactory

Research Group Microbial chemistry @ Uppsala Univ
Professor Peter Lindblad.
Associate Professor Karin Stensjö, Dr Pia Lindberg.
PostDocs: Drs Gustaf Sandh, Bagmi Pattanaik, Helder Miranda, Namita Khanna. PhDstudents: Daniel Camsund, Elias Englund, Rui Miao, Christoph Howe, Claudia Durall, Feiyan Liang, Xin Li. & MSc and Research training students.



Uppsala University (UU) is an international research university established in 1477. Comprehensive peer reviews and university rankings consistently show that research at UU is of the highest international standard. Traditions of knowledge and outstanding research have earned UU an excellent reputation and an unquestioned place in the international research community. About 6,300 employees and > 40,000 students. Photochemistry & Molecular Science (Fotomol) is a multidisciplinary unit within the Department of Chemistry covering research from microbial to organic/analytical/physical chemistry. The focus is on fundamental science to convert solar energy into energy carriers using truly artificial to purpose designed microbiological systems. Microbial Chemistry, headed by Dr Lindblad, is a PhD-subject and a research group at Fotomol.

Selected Publications

Berg, LINDBLAD, Svensson. 2014. Cyanobacteria as a source of hydrogen for methane formation. World J Microbiol Biotechn 30: 539-545

Camsund, Heidorn, LINDBLAD. 2014. Engineering of LacI-repressed promoters and DNA-looping in a cyanobacterium. J Biol Eng 8: 4

Khetkorn, Khanna, Incharoensakdi, LINDBLAD. 2013. Metabolic and genetic engineering of cyanobacteria for enhanced hydrogen production. Biofuels 4: 553-561

Raleiras, Kellers, LINDBLAD, Styring, Magnuson. 2013. Isolation and characterisation of the small subunit of the uptake hydrogenase from the cyanobacterium *Nostoc punctiforme*. J Biol Chem 288: 18345-18352

Huang, LINDBLAD. 2013. Wide-dynamic-range promoters engineered for cyanobacteria. J Biol Eng 7: 10

Skjånes, Rebours, LINDBLAD. 2013. Analysis of the potential of green microalgae to produce hydrogen, pharmaceuticals and other high value products in a combined process. Crit Rev Biotechn 33: 172-215

Khetkorn, LINDBLAD, Incharoensakdi. 2012. Inactivation of uptake hydrogenase leads to enhanced and sustained hydrogen production with high nitrogenase activity under high light exposure in the cyanobacterium *Anabaena siamensis* TISTR 8012. J Biol Eng 6:19

Khetkorn, Baebprasert, LINDBLAD, Incharoensakdi. 2012. Redirecting the electron flow towards the nitrogenase and bidirectional Hox-hydrogenase by using specific inhibitors results in enhanced H_2 production in the cyanobacterium *Anabaena siamensis* TISTR 8012. Biores Techn 118: 265–271

Agervald, Camsund, Stensjö, LINDBLAD. 2012. CRISPR in the extended *hyp*-operon of the cyanobacterium *Nostoc* sp. strain PCC 7120, characteristics and putative function(s). Intern J Hydrogen Energy 37: 8828-8833

LINDBLAD, Lindberg, Oliveira, Stensjö, Heidorn. 2012. Design, engineering and construction of photosynthetic microbial cell factories for renewable solar fuel production. Ambio 41 (Suppl 2): 163-168

Lindberg, Devine, Stensjö, LINDBLAD. 2012. HupW Protease is Specifically Required for Processing of the Catalytic Subunit of the Uptake Hydrogenase in the Cyanobacterium *Nostoc* sp. strain PCC 7120. Appl Environ Microbiol 78: 273-276

Baebprasert, Jantaro, Khetkorn, LINDBLAD, Incharoensakdi. 2011. Increased H_2 production in the cyanobacterium *Synechocystis* sp. strain PCC 6803 by redirecting the electron supply via genetic engineering of the nitrate assimilation pathway. Metabol Eng 13: 610-616

Oliveira, LINDBLAD. 2011. Novel insights into the regulation of LexA in the cyanobacterium *Synechocystis* sp. strain PCC 6803. J Bacteriol 193: 3804-3814

Camsund, LINDBLAD, Jaramillo. 2011. Genetically engineered light sensors for control of bacterial gene expression. Biotechn J 6: 826-836. Front cover

Heidorn, Camsund, Huang, Lindberg, Oliveira, Stensjö, LINDBLAD P. 2011. Synthetic Biology in Cyanobacteria: Engineering and Analyzing Novel Functions. Meth Enzymol 497: 540-579

Agervald, Baebprasert, Zhang, Incharoensakdi, LINDBLAD. Stensjö. 2010. The CyAbrB transcription factor CalA regulates the iron superoxide dismutase in *Nostoc* sp. strain PCC 7120. Environ Microbiol 12: 2826-2837

Huang, Camsund, LINDBLAD, Heidorn. 2010. Design and characterisation of molecular tools for a Synthetic Biology approach towards developing cyanobacterial biotechnology. Nucl Acids Res 38: 2577-2593

Agervald, Zhang, Stensjö, Devine, LINDBLAD. 2010. CalA, a CyAbrB protein, interacts with the regulatory region of *hyp*C and acts as a repressor of its transcription in the cyanobacterium *Nostoc* sp. strain PCC 7120. Appl Environ Microbiol 76: 880-890

Magnuson, Anderlund, Johansson, LINDBLAD, Lomoth, Polivka, Ott, Stensjö, Styring, Sundström, Hammarström. 2009. Biomimetic and Microbial Approaches to Solar Fuel Generation. Accounts Chem Res 42: 1899-1909

Angermayr, Hellingwerf, LINDBLAD, Joost Teixeira de Mattos. 2009. Energy biotechnology with cyanobacteria. Curr Opin Biotechn 20: 257-263

Ow, Noirel, Cardona, Taton, LINDBLAD, Stensjö, Wright. 2009. Quantitative overview of N_2 fixation in *Nostoc punctiforme* ATCC 29133 through cellular enrichments and iTRAQ shotgun proteomics**.** J Prot Res 8: 187-198

Oliveira, LINDBLAD. 2008. An AbrB-like protein regulates the expression of the bidirectional hydrogenase in *Synechocystis* sp. strain PCC 6803. J Bacteriol 190: 1011-1019

Tamagnini, Leitão, Oliveira, Ferreira, Pinto, Harris, Heidorn, LINDBLAD. 2007. Cyanobacterial hydrogenases: diversity, regulation and applications. FEMS Microbiol Rev 31: 692-720