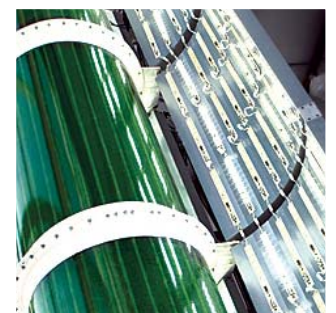
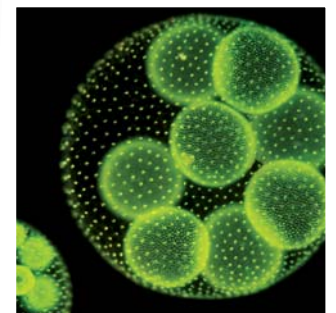
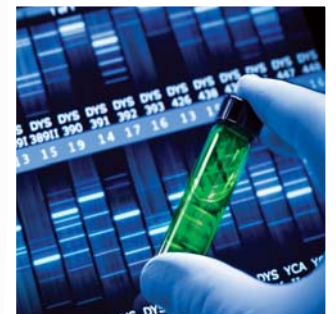


# Protein Therapeutics

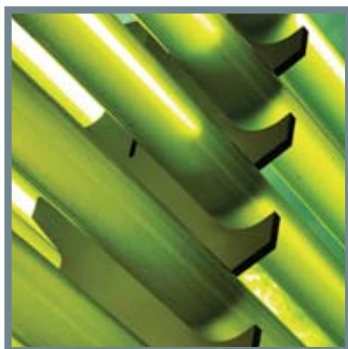
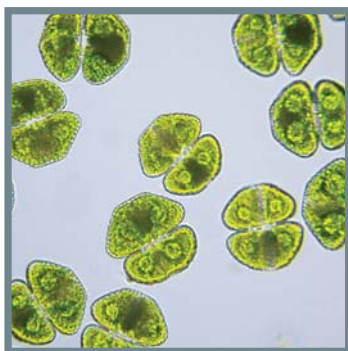
Next-generation clean biologics and enzymes from algae



Centre for  
Solar Biotechnology

# The initiative

Using just sunlight, nutrient water and CO<sub>2</sub>, algae can produce high-value recombinant proteins.



**Top:** Microalgae cells as protein expression factories. **Middle:** Microalgae are cultured in photobioreactors. **Bottom:** Recombinant protein therapeutics.

## VISION

This initiative is focused on delivering a microalgae biotechnology platform for the commercial production of designer proteins.

The platform is based on single cell green algae (microalgae) that use sunlight, CO<sub>2</sub> and nutrients to produce high-value designer proteins, such as protein therapeutics, vaccines, antibody therapies, industrial enzymes and novel biomaterials.

**The Protein Therapeutics initiative builds on over 50 person years of process development across our team and is focused on delivering advance microalgae cell factories for recombinant protein production.**

Microalgae offer advantages in terms of functional ability, cost and safety. They can effectively fold and disulfide-link proteins, are generally free of human viruses and pathogens, have rapid growth rates (similar to yeast), and require low-cost scalable bioreactors and growth media. Simple protein purification is enabled by the absence of pyrogenic contaminants (e.g. bacterial lipopolysaccharide). The use of CO<sub>2</sub>, rather than organic carbon sources, also inhibits yeast, bacterial and fungal contamination and simplifies the maintenance of pure cultures.

Target therapeutic peptide leads for the treatment of stroke and epilepsy, have proved difficult to produce in other systems but can now be produced in algae. In addition, the algal production of full length monoclonal antibodies, chimeric anti-cancer immunotoxins, interferon, pro-insulin, luciferase and white spot syndrome virus vaccine for tiger prawns has been reported. Our team, in partnership with industry, have put in place an advanced pipeline for the optimisation of production conditions, next generation systems design as well as techno-economic and life cycle validation.

We are now seeking partners specialising in biotechnology and engineering to bring these systems and products to market.

For more information, please contact us.  
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