



## American Chemical Society Hosts Targeted Photodynamic Therapy at Salt Lake City

London; March 22nd 2009: A combined team of researchers from Imperial College London and one of Britain's leading innovative PDT companies PhotoBiotics Ltd, presented their latest results on targeted photodynamic therapy (t-PDT) at the **237th American Chemical Society's** meeting in **Salt Lake City**, 22<sup>nd</sup> – 26<sup>th</sup> March 2009.

As currently practised, photodynamic therapy (PDT) destroys tumours using visible laser light and photosensitisers; a process with many advantages over conventional cancer treatments. However, the photosensitisers are sometimes difficult to deliver, clear slowly from the blood, and are not selectively targeted. This can make patients photosensitive long after treatment.

The latest work from the Imperial/PhotoBiotics team builds on earlier success at conjugating photosensitising molecules to antibody fragments, then using the resulting photo-immuno-conjugates (PICs) to specifically target and destroy a prostate tumour cell line *in vivo* (in an animal model), on illumination with visible laser light.

The ACS meeting were told of novel chemical modifications to a common photosensitiser derived from chlorophyll, called PPa, which significantly improve its water solubility, while reducing other unwanted interactions. The resulting PICs derived from conjugating the modified PPa with antibody fragments could target and destroy an ovarian tumour cell-line *in vivo* (SKOV-3 cells as xenografts in immune-compromised nude mice) with greater efficacy upon PDT than previously achieved by the Imperial/PhotoBiotics team.

"We can now show how to use tumour-seeking antibody fragments to deliver highly potent water-soluble light-activated drugs safely, accurately and consistently to cancer sites and destroy them", says Ms Ioanna Stamati, the presenting author of the Imperial/PhotoBiotics poster at the prestigious ACS meeting. Her PhD supervisor, Dr Mahendra Deonarain agrees. "The improvements we have made to a standard PDT sensitiser PPa, plus conjugation to an antibody fragment, not only further minimises the risk of healthy tissue being accidentally damaged during treatment, it also maximises the number of cancer cells that can be destroyed."

### Notes for Editors:

1. For more information please contact: Dr Lionel R Milgrom, PhotoBiotics Ltd Press Office; Tel: +44 (0)208 450 8760. Mob: +44 (0)7970 852156. Email: media@photobiotics.com
2. 'Targeted photodynamic therapy with multiply loaded recombinant antibody fragments.' *International Journal of Cancer* 2008; **122**: 1155-1163.
3. 'Fluorescence characterisation of multiply-loaded anti-HER2 single-chain Fv-photosensitiser conjugates suitable for photodynamic therapy'. *Photochemical and Photobiological Sciences*. 2007; **6**: 933-939.

4. 'Innovations in Biotechnology 2008: Development-Stage Companies and Scientific Findings Leading the Way', *BioWorld Today*, June 2008.  
[http://www.bioworld.com/servlet/com.accumedia.web.Dispatcher?next=S08438\\_6064](http://www.bioworld.com/servlet/com.accumedia.web.Dispatcher?next=S08438_6064).

**About PhotoBiotics** (see [www.photobiotics.com](http://www.photobiotics.com))

Photobiotics is a spin-out company from Imperial College London developing novel biologically-targeted photodynamic therapeutic (*t*-PDT) agents to specifically target and destroy diseased cells far more effectively than the conventional PDT in current use, so significantly extending market penetration. Potential applications of this new technology include the diagnosis and therapy of cancer, restenosis following angioplasty, various proliferative skin conditions, or as 'irresistible antibiotics' and many more. PhotoBiotics is highly distinctive in possessing a unique integrated multidisciplinary capability involving chemistry; laser physics and biology (Please see the website).

**About PDT**

Conventional PDT has an established niche in the treatment of certain cancers and in age related macular degeneration (AMD), with product sales in excess of \$500m annually. However, conventional PDT's clinical development and use have been slow to evolve owing mainly to the novelty of the treatment regimen and to post-treatment systemic photosensitivity. The photosensitising agent remains in the system for up to six weeks post treatment in some cases, and when it reaches the skin, patients can become exquisitely photosensitive to ambient light even on cloudy days, leading to symptoms akin to acute sunburn in uncovered parts of the body. Photobiotics uniquely targeted approach to PDT will overcome the issue of photosensitivity without compromising efficacy, thus greatly extending the potential of this otherwise superior treatment modality.