

Lung Cancer

Why we focus on Lung Cancer

Lung cancer is the second most commonly diagnosed cancer in the UK after breast cancer, with 42,000 new cases in 2010. Survival rates in the UK are distressingly low and worse than in much of Europe – less than 10 per cent of patients survive five years after their diagnosis. Lung cancer has one of the lowest survival outcomes of all cancers because over two-thirds of patients are diagnosed at a late stage when curative treatment is not possible. When diagnosed at its earliest stage, around 73% of patients with non small cell lung cancer and around 56% of patients with small cell lung cancer will survive their disease for at least one year after diagnosis. Occupational exposures are linked to around 1 in 8 lung cancers in the UK, a large proportion of these due to asbestos resulting in a cancer of the lining of the lungs called Mesothelioma. Our researchers are combining both basic molecular biology and clinical research to advance our understanding and treatment of lung cancer.

What we do

- We are investigating the early events that initiate lung cancer, such as loss of the tumour suppressor gene LIMD1.
- We are looking at aberrant tumour metabolism and inflammation in mesothelioma and how this can be exploited in the clinic. Based on our preclinical studies we are now testing whether arginine deprivation will herald a new approach in treating patients with lung cancers (ADAM and TRAP clinical trials).
- We are identifying new therapeutic strategies for treatment of mesothelioma patients using a synthetic lethal approach.
- We are investigating how lung cancer spreads which will help us to identify and design new therapies to prevent this spread and metastasis.

We believe this multi-disciplinary approach to lung cancer research will have a real impact on patient health.



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Key Publications

- Foxler *et al.* The LIMD1 protein bridges an association between the propyl hydroxylases and VHL to repress HIF-1 activity. *Nat. Cell Biol.* 2012; 14:201-8
- Sharp *et al.* The chromosome 3p21.3-encoded gene, LIMD1, is a critical tumor suppressor involved in human lung cancer development. *Proc. Natl. Acad. Sci.* 2008; 105: 19932-7.
- Szlosarek *et al.* Metabolic response to pegylated arginine deiminase in mesothelioma with promoter methylation of argininosuccinate synthetase. *J Clin. Oncol.* 2013; 31:111-3
- Szlosarek *et al.* In vivo loss of expression of argininosuccinate synthetase in malignant pleural mesothelioma is a biomarker for susceptibility to arginine depletion. *Clin. Cancer Res.* 2006; 12:7126-31
- Radtke *et al.* ERK2 but not ERK1 mediates HGF-induced motility in non small cell lung carcinoma cell lines. *J Cell Sci.* 2013; *In press*
- Joffre *et al.* A direct role for Met endocytosis in tumorigenesis. *Nat. Cell Biol.* 2011; 13:827-37

Who does the research

Prof. Kairbaan Hodivala-Dilke	Tumour angiogenesis
Prof. John F Marshall	Integrin biology
Dr. Richard Grose	Cell signalling & chemoresistance
Dr. Stephanie Kermorgant	Cell signalling & metastasis
Dr. Sarah Martin	Cancer therapeutics
Dr. Tyson Sharp	Molecular cell biology
Dr. Peter Szlosarek	Cancer cell metabolism, Clinical trials

Major Funders

- Barts and the London Charity
- British Lung Foundation
- Medical Research Council
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- BBSRC
- Cancer Research UK