Dr Youqiang Ke obtained a degree in veterinary medicine at Huazhong Agricultural University of Wuhan, China and he finished his PhD in biology at the University of Leeds in England. Dr Ke joined the Cancer and Polio Research Laboratories in the School of Biological Sciences of the University of Liverpool in 1989 to work as a Postdoctoral Research Associate to investigate the DNA regions responsible for metastasis of breast cancer. In 1994, Dr Ke got a lecturer position in the Department of Pathology in the Faculty of Medicine of the same university and started to work on molecular pathology of prostate cancer. Dr Ke was promoted to a Senior Lecturer in 2001, a Reader in 2003 and a Professor in 2005.

The initial effort of Dr Ke's team had been devoted to the identification of genes involved in the malignant progression of prostate cancer. Using differential display-derived molecular approaches as core techniques (Ke et al, Anal Biochem 269: 201-204, 1999; Ke et al, Nucleic Acids Res 27: 912-914, 1999; Jing et al, Anal Biochem 287: 334-337, 2000), Dr Ke and colleagues identified a large number of candidate genes that expressed differentially between benign and malignant model cells. After verifying the expression differences of candidate genes between the benign and the malignant human tissues examined by in situ hybridization analysis, the candidate genes were subjected to a modified invasion assays to test their invasiveness (Smith et al, FEBS Lett 423: 19-24, 1998). To test the metastasis-promoting activity of the candidate genes, a benign rat Rama 37 model cells and their host animals (Br J Cancer 77: 287-296, 1998; Oncogene 14: 1581-1588, 1997) were used to transfect and to inoculate the specific gene-transfectants. The tumourigenicity of the transfectant cells were tested in nude mice.

Dr Ke's team has successfully identified and characterized a large number of genes that are involved in the malignant progression of the prostate cancer cells and have studied their prognostic significance and possible clinical application. Among the genes identified and characterized, at least three of them had never been previously related to any cancerous diseases. One identified metastasis-inducing gene (Jing et al, Cancer Res 60: 2390-2398, 2000) is that coding for human cutaneous fatty acid binding protein (C-FABP). Another gene is a novel tumour-suppressor gene whose diminished expression is involved in the initiation of the malignant progression of prostate cancer (Jing et al, J Natl Cancer Inst 94: 482-490, 2002). The third gene identified by Dr Ke's group is a new prognostic marker Ribosomal Protein L19 (Bee et al, Clin Cancer Res 12: 2061-2065, 2006). The effort of Dr Ke and his colleagues have also been made on the investigations of the possible molecular mechanisms underlying the metastasis-promoting or suppressing activities of these genes, particularly the C-FABP gene (Adamson et al, Oncogene 22: 2739-2749, 2003; Jing et al, Cancer Res 61: 4357-4364, 2001). More recently, Dr Ke is involved in assessment of bio-markers for prostate cancer and the assessment of possibility of using these genes as treatment targets (Morgan et al, Int J Oncol 32: 767-775, 2008; Forootan et al, Int J Cancer 118: 2255-2261, 2006; Forootan et al, Int J Oncol 36: 69-76, 2010).

Current effort is focused on further studies of molecular mechanisms on how these genes work inside the cancer cells, particularly on investigations of possible new signaling pathways initiated by these identified genes. Therapeutic interventions based on the mechanisms are being developed and tested in experimental animals.

Dr Ke has authored about 60 publications in peer-reviewed journals and he is an author of several book chapters in the field of molecular pathology.