Dr Bamber is head of the Ultrasound and Optical Imaging Physics Team at The Institute of Cancer Research and The Royal Marsden Hospital, Sutton, U.K. He is Reader in Physics Applied to Medicine, and a Senior Tutor of the Institute of Cancer Research, University of London, as a member of the Academic Dean's team. During 1994-1995, he worked in the Advanced Projects Team at the Medical Products Group of Hewlett-Packard, Andover, USA. He has a BSc in Physics from the University of Kent at Canterbury UK, an MSc in Biophysics and Bioengineering from the University of London, and a PhD in Biophysics from the University of London. His research interests have been broad, included tissue acoustics, ultrasound image analysis, speckle reduction, aberration correction, elasticity imaging, temperature imaging, ultrasound psychophysics, tumour blood flow, breast cancer, skin cancer, contrast agents, guidance of cancer treatment, ultrasound in radiation dosimetry, ultrasound gene delivery, photoacoustics and molecular imaging. He has supervised 29 PhD students, and has published about 165 papers, 13 book chapters, and 5 patents. He has taught the Physics of Medical Ultrasound in several Masters courses since 1979. He is a member of the British Medical Ultrasound Society, the Institute of Physics, the Society of Photo-optical Instrumentation Engineers, the Ultrasonics Ferroelectrics and Frequency Control Society of the Institution of Electrical and Electronic Engineers, and the International Society for Biophysics and Imaging of the Skin. He has served on the Governing Council of the British Medical Ultrasound Society, was previously chairman of their Science and Education Committee (current member), and was previously vice-president of the International Society for Skin Imaging. For a 10-year period he was president of the International Association for Breast Ultrasound. He was a founding faculty member of the International Breast Ultrasound School in 1991, and has contributed to IBUS teaching throughout most of its life to date. He is a member of the scientific advisory boards of the companies: Michelson Diagnostics and Supersonic Imagine.

Breast ultrasound has featured strongly throughout Dr Bamber's research career. This interest began with his first project as a post-doctoral scientist, which began in 1979 before the advent of real-time scanners with adequate quality for breast imaging. He built and operated two water-bath greyscale dedicated breast scanners, comparing prone scanning with supine scanning, the two alternative techniques used at the time. He documented ultrasound properties of breast tissue by measurements on postoperative mastectomy specimens. These were also scanned using the supine breast scanner to compare ultrasound image sections with histological sections, demonstrating level of agreement between ultrasound measured tumour dimensions and the true dimensions. The prone scanner was later developed to explore applications of wide-aperture mirror axicon focusing to improving the resolution of breast ultrasound images. He conducted early Doppler studies of breast tumours, demonstrating a relationship between Doppler features and tumour surface area rather than volume, a variation with response to endocrine treatment, and in the normal breast, during the menstrual cycle and pregnancy. He pioneered the development of adaptive ultrasound speckle noise reduction and applied the method to breast images, and developed a computer assisted breast ultrasound diagnostic expert system which incorporated dynamic diagnostic features based on real-time echographic assessment of tumour compressibility and mobility. He assisted the first breast investigation using colour Doppler, applying it to tumour diagnosis and monitoring response to chemotherapy, including the development of a computer method for automated quantification of colour Doppler signals, and he was the first explore the use of kinetic features of microbubble contrast enhancement for breast tumour diagnosis. Finally, he developed freehand elastography of the breast, leading to two of the current commercial elastography systems, and has contributed substantially over the past 10 years to the further development of advanced elastographic methods.