Dr. Lane's areas of expertise include membrane transport, biophysical approaches towards the elucidation of drug-drug, drug-excipient and drug-membrane interactions, mechanisms of drug absorption, transdermal drug delivery, topical drug delivery, percutaneous absorption and buccal absorption. Dr Lane acts as a consultant to a number of pharmaceutical companies and serves on the editorial board of a number of pharmaceutical science journals. Her major research interests are in the development of optimal drug formulations for effective delivery of therapeutics, with special reference to skin and to mucus membranes. Her research group uses a range of biophysical techniques to probe the mechanisms of skin penetration and modulation.

Specific areas of interest include:
- Mechanisms of skin, nail and mucous membrane permeation
- Rational design of formulations for skin, nail and mucous membranes
- Action of penetration modulating agents (enhancers and retarders)
- Dermatopharmacokinetics
- Confocal Raman Spectroscopy

Dr Lane is the Secretary of Skin Forum, an organisation which represents scientists from a diverse range of disciplines who share a common interest in the physicochemical and biological properties of human skin (www.skin-forum.eu).

Recent representative publications include:

A new paradigm in dermatopharmacokinetics - Confocal Raman spectroscopy.
Mateus R, Abdalghafor H, Oliveira G, Hadgraft J, Lane ME.

The transdermal delivery of fentanyl.
Lane ME.

Influence of penetration enhancer on drug permeation from volatile formulations.
Santos P, Watkinson AC, Hadgraft J, Lane ME.