Epidermal growth factor receptor (EGFR) is a potential target for cancer treatment due to its tyrosine kinase activity and overexpression in many human carcinomas. To inhibit the activity of EGFR, new drugs "small-molecule tyrosine kinase inhibitors" (SMTKIs) have been designed.

A proteomic analysis was undertaken using pH 3–10 non-linear immobilised pH gradient (IPG) isoelectric focusing strips and 12% SDS PAGE gels. 2D electrophoresis was optimised to compare expression patterns of proteins secreted from A431 cells (a squamous carcinoma overexpressing EGFR) treated with SMTKI, without SMTKI and with SMTKI vehicle only (DMSO). Proteins which were expressed differently under these conditions were detected using ImageMaster® 2D analysis software. Identification of a select group of proteins is underway using matrix-assisted laser desorption/ionization-time of flight (MALDI-TOF) mass spectrometry.

Proteins secreted from cells in response to drug treatment could potentially be natural surrogate markers. Surrogate markers are essential for the evaluation of new drugs under development in preclinical models, in clinical trials and to optimise treatment of individual patients to give effective treatments for lung, breast and many other cancers.