need for a lung biopsy and help reduce patient morbidity, but is also accurate in biopsy samples from patients in whom lung effusions are inaccessible.

Original article Holloway AJ *et al.* (2006) A molecular diagnostic test for distinguishing lung adenocarcinoma from malignant mesothelioma using cells collected from pleural effusions. *Clin Cancer Res* **12:** 5129–5135

Improved differentiation of tumor subtypes in mixed clinical samples

There are several subtypes of lung cancer, which are difficult to differentiate between using current pathologic criteria. Currently, all subtypes of non-small-cell lung cancer receive the same treatment, although there is wide variability in clinical outcome. Thus, improved differentiation could have an important impact on clinical decision-making and patient outcomes.

Mass spectrometry has been considered particularly well suited as a diagnostic tool in cancer. Amann and co-workers investigated whether combining existing simple laboratory techniques with matrix-assisted laser desorption/ionization–time of flight (MALDI-TOF) mass spectrometry enabled selective profiling of proteins in lung cancer cells in mixed clinical samples, such as fine-needle aspirates.

Lung cancer cell lines were cytocentrifuged onto metal-coated glass slides and then fixed and stained for optimal morphologic identification. Fine-needle aspirates from murine allograft tumors and resected human tumors were also used to test the reproducibility of the method. An erythrocyte lysis protocol was added to reduce the hemoglobin content in the aspirates before cytocentrifugation, because hemoglobin suppresses any other protein signatures in clinical samples.

This simple method resulted in reproducible, sensitive, and selective cancer-cell-specific protein profiling, suggesting that this approach has the potential to refine the diagnosis of cancer, determine the cancer type, and predict both prognosis and response to treatment in clinical practice.

Original article Amann JM *et al.* (2006) Selective profiling of proteins in lung cancer cells from fine-needle aspirates by matrix-assisted laser desorption ionization time-of-flight mass spectrometry. *Clin Cancer Res* **12:** 5142–5150

Prognostic value of the ERCC1 protein in NSCLC

The International Adjuvant Lung Cancer Trial (IALT) demonstrated improved survival with adjuvant chemotherapy after complete resection of non-small-cell lung cancer (NSCLC). Although cisplatin-based chemotherapy is effective in some patients, however, it is associated with serious adverse events and is not always well tolerated. *In vitro* studies of the DNA excision repair protein ERCC1 have shown its expression to correlate with resistance to platinum compounds; thus, data on the expression of this protein in tumors might predict survival benefit from cisplatin-based chemotherapy. Patients from the IALT with completely resected NSCLC were enrolled into the IALT Biology study to investigate this outcome.

Immunohistochemistry was used to detect the ERCC1 protein in NSCLC specimens obtained during excision surgery. Among patients whose tumors lacked ERCC1 expression, those who underwent adjuvant chemotherapy with a cisplatin-based regimen lived significantly longer than did those who received no therapy ($P = 0.002$). This survival benefit was not seen for patients with ERCC1-positive tumors—indeed, a trend was observed for patients with ERCC1-positive tumors to perform better without chemotherapy. Among patients who did not receive adjuvant chemotherapy in the original study, those with ERCC1-positive tumors survived longer than those with ERCC1-negative tumors ($P = 0.009$).

The authors conclude that patients with NSCLC who have ERCC1-negative tumors derive a benefit from adjuvant cisplatin-based chemotherapy whereas patients with ERCC1-positive tumors do not, and that ERCC1 protein expression is an independent predictor of the effectiveness of adjuvant chemotherapy.

Original article Olaussen KA *et al.* (2006) DNA repair by ERCC1 in non-small-cell lung cancer and cisplatin-based adjuvant chemotherapy. *N Engl J Med* **355:** 983–991

Survival advantage of imatinib mesylate in newly diagnosed chronic myelogenous leukemia

In a randomized trial of newly-diagnosed patients with Philadelphia chromosome (Ph)-positive chronic myelogenous leukemia (CML),