3. Summary

Molecular detection of invasive fungal disease in immunocompromised patients

In my work I have been able to establish three different PCR-based assays for the quantitative detection and identification of fungal DNA. Two DNA-based detection assays termed PanAC PCR and panfungal PCR based on the real-time quantitative (RQ-PCR) technology were designed to detect and quantify the most important fungal genera currently associated with IFD including a large number of pathogenic moulds and yeasts. Upon standardization of both RQ-PCR techniques, the applicability in the clinical setting was assessed by investigating a series of clinical specimens from patients with documented fungal infection, and by prospectively studying patient cohorts at high risk of IFD.

In view of the importance of precise identification of the causative fungal pathogen, a semi-nested PCR method coupled with fluorescent capillary electrophoresis detection was established. It facilitates rapid identification of fungal species in clinical materials that test positive for IFD using one of the broad-range screening assays. This method was also tested in a population of patients with documented fungal infections to assess its clinical potential.