

Clinical importance for the identification and validation of micro RNAs and long non-coding RNAs as diagnostic and therapeutic biomarkers in cancer

Duncan Ayers

University of Malta, Malta

Abstract

The evidence for the critical clinical repercussions stemming from the dysregulated expression patterns of novel molecular classes such as microRNAs (miRNAs) and long non-coding RNAs (lncRNAs) is evermore present within a large spectrum of human disease conditions, including cancer. Consequently, the proper identification and subsequent validation of individual and/or multiple signatures of dysregulated miRNAs and/or lncRNAs as biomarkers for specific functional phenotypes (eg. Chemoresistance properties to conventional cytotoxic drugs) is constantly emerging as a valuable tool in the oncology clinic setting. Presently, reverse transcription – quantitative polymerase chain reaction (RT-qPCR) technology is demonstrating to be a robust and highthroughput platform for miRNA and lncRNA expression profiling, allowing for the consequent identification of novel dysregulated molecular key players for specific clinical conditions. However, following proper identification of such putative molecular signatures, it is imperative to devise the appropriate functional assays in order to establish a firm link between the miRNA/lncRNA dysregulation signatures and the investigated phenotype of clinical importance.

In essence, these novel classes are demonstrating to contribute key diagnostic and prognostic biomarkers that can serve the oncology clinician to take more informed clinical decisions, based on the individual tumour characteristics. Such informed clinical decisions ultimately allow for bespoke and enhanced therapeutic efficacy with minimal suffering to the individual cancer patient.

Biography

Ayers has completed his PhD in Translational Medicine from The University of Manchester (UK) and is currently continuing his postdoctoral studies at The University of Malta. Dr. Ayers is also a Research Associate with the Faculty of Medicine & Human Health Sciences at the University of Manchester. During his doctoral studies, Dr. Ayers also spent a 17-month attachment with the Vandesompele group at the Center for Medical Genetics Ghent (Ghent University, Ghent, Belgium). He has published / presented his research in more than 31 reputed journal papers and international meetings, together with contributing to four book publications.