

DNA extraction, polymerase chain reaction, and sequencing: workshop in clinical genetics

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ABSTRACT

DNA extraction, polymerase chain reaction (PCR), and sequencing are basic methods in molecular biology and genetics. Those are the routinely performed procedures in genetic research and laboratory diagnostics for pathology and human genetics. With the advance in the genetics and clinical service for cancer management, mutation analysis is very important for both diagnosis and prediction of therapeutic response. Detection of *KRAS*, *BRAF*, *EGFR*, and *c-KIT* mutations is presently performed in almost every molecular pathology lab as part of daily clinical service in cancer management. In this workshop we will discuss tips and tricks for those three basic lab methods, such as the ways to improve amount and purity of DNA extraction from blood and tissues, avoid DNA degradation during the procedure and storage, perform PCR, the factors and substance that inhibit polymerases during PCR, design effective primer pairs, the basic theory for sequencing, as well as interpretation of sequencing. Although it has been widely discussed, this workshop is especially important for clinicians with no previous hands-on laboratory experience. In addition, the number of laboratories able to perform and serve basic genetic and molecular analysis is still limited in Indonesia. With this workshop, we expect to improve clinician's knowledge and skill in DNA extraction, PCR, and sequencing.

Keywords: DNA, PCR, sequencing

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