Laser Capture Microdissection: Methodical Aspects and Applications with Emphasis on Immuno-Laser Capture Microdissection

Abstract:
Laser capture microdissection (LCM) is an easy, extremely fast and versatile method for the isolation of morphologically defined cell populations from complex primary tissues for molecular analyses. However, the optical resolution is limited due to the use of dried sections without coverslip necessary for tissue capture, and routine stains such as hematoxylin and eosin are sometimes insufficient for precise microdissection, especially in tissues with diffuse intermingling of different cell types and lack of easily discernible architectural features. Therefore, several groups have adapted immunohistochemical staining techniques for LCM. In addition to providing high contrast targets for microdissection, immunostaining allows selection of cells not only according to morphological, but also phenotypical and functional criteria. In order to allow reliable tissue transfer on one hand and preserve the integrity of the target of analysis such as DNA, RNA and proteins on the other hand, immunostaining protocols have to be modified for the purposes of LCM. The following review gives an overview of immuno-LCM and describes some applications, e.g. in the field of hematopathology.

Stichworte:
Laser capture microdissection; Immunohistochemistry; RT-PCR; Gene expression; Polymerase chain reaction

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