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不同固定条件下细胞与活细胞的原子力显微镜实时观察

庄乐南[1]、齐浩*[1]、孙润广[2]、肖佳[1]、陈文芳[1]、刘颖[2]、朱杰[2]
1 陕西师范大学生命科学学院
2 陕西师范大学物理与信息技术学院

用不同固定剂和同一固定剂的不同浓度处理细胞，以及不加任何固定剂而直接在生理溶液中对细胞进行原子力显微镜（atomic force microscopy， AFM）成像。以探寻AFM观察固定细胞的最佳条件以及在生理溶液中实时观察活细胞的方法。实验结果表明以戊二醛为固定剂并使用0.5～1%的浓度固定细胞后，再用缓冲溶液漂洗，可获得质量良好的AFM图像；而直接在生理溶液中进行观察时，成像质量虽低于使用固定剂时的成像质量，但保持了细胞的生活原貌。因此用原子力显微镜进行细胞表面形貌的观察时，使用固定剂可能会影响对细胞生活原貌的观察。若要从生理溶液中得到高分辨率的细胞生活原貌图像，还需要在制样与观测系统两方面进行改进。

Application of AFM in observing cells in different fixation conditions and living cells in buffer solution in real time

To determine the best condition of observing the fixed cells in the air and the living cells in buffer solution in real time, application of AFM in observing cells treated with different fixation conditions, with same fixation condition but different concentrations, and cells without treated with any fixation treatment were reported. Results suggested that images with good quality can be acquired when cells were treated with 0.5～1% glutarald ehyde as fixation reagent to fix 15min,followed washing with Hank’s buffer. While images resolution and quality obtained from the living cells in Hank’s buffer are not as good as those obtained from cells fixed in the air, but in that situation, cells can be kept in the natural state. Therefore improvements of both sample preparation and observation system are necessary to obtain better image quality of natural cells.

关键词