

# 光镊捕获的单个解冻人血红细胞的拉曼光谱研究

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红细胞的冰冻与解冻的实施为血液的长期保存提供了有效的方法。在过去的几十年中，红细胞冻存有过数种方法，其中高甘油冻存法比较普遍，因而用此方法保存红细胞是否对红细胞产生了影响及产生了什么影响是值得研究的。作者利用激光光镊拉曼光谱系统，通过拉曼光谱对冻存人血红细胞进行研究；结果显示，红细胞冻存前后的拉曼光谱有一定的变化，解冻提取后也产生了一定的变化，这些变化主要体现在对应拉曼光谱的位置和强度上。研究结果对进一步研究红细胞的冻存具有一定的参考价值。

## Study of Raman spectroscopy of single human red blood cell trapped optically after thawed

Through cryopreserving and thawing, human red blood cells can be conserved for a long time. In the past several decades, there were several methods of conserving red blood cells based on it, and the method of high glycerol was applied widely in the several methods. It is valuable to find out whether the red blood cells have changed and what kind of changes it will happen. In the article, thawed red blood cells were studied by the means of Raman spectroscopy using Laser tweezers Raman spectroscopy system. The changes of the Raman spectroscopy of the red blood cells cryopreserved at  $-80^{\circ}\text{C}$  were found, and the authors also found some changes of the red blood cells in the culture liquid after they were thawed. All these are valuable for the study to cryopreserved red blood cells more deeply.

### 关键词

拉曼光谱(Raman spectroscopy); 光镊(Laser tweezers); 红细胞(Red blood cell); 冻存(Cryopreserve); 解冻(Thaw)