

Abstract**An Apparatus and Method for Real Time In-Situ Targeted Virtual Biopsy**

5 The present invention relates to an intelligent apparatus and method for real time in-situ targeted virtual biopsy to recognize and localize the cancer cells inside the patient organ and body. Three recognition technologies including optical character recognition based on optical coherence tomography, sonar character recognition based multi-frequency ultrasound unit, and physical
10 character recognition based on the hardness detection have been integrated for cancerous cell identification and boundary recognition. It does not need to take any tissues from patient for pathological examination, so can exercise the biopsy procedure in-situ. The knowledge based artificial intelligence technology has been used to help on recognition of histologic patterns with molecular
15 characteristics and physical parameters from huge historical data within a few of micron seconds. It can perform the cancerous identification procedure in real time and help surgeon to perform the treatment procedures more accurately, quickly, safely and effectively

20 [Fig 1]