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THz waves have low photon energies (~ 4.1 meV for 1 THz), which is about 1 million times weaker than the energy of X-ray photons. They do not cause any harmful ionization in biological tissues. The terahertz radiation is strongly attenuated by water and is very sensitive to water content. The interest in terahertz imaging and spectroscopy of biologically related applications is increasing. This paper provides current status and recent advances in terahertz spectroscopy techniques in biological and medical applications. In particular, we report on our designs of THz Quantum-Cascade sources to identify cancerous tissues and other medical issues.