In this work we show a unified method to study the mechanical properties of cells using the atomic force microscope. Stress relaxation and creep compliance measurements permitted to determine, the relaxation times, the Young moduli and the viscosity of breast cancer cells (MCF-7). The results show that the mechanical behaviour of MCF-7 cells responds to a two-layered model of similar elasticity but differing viscosity. The combination of the method presented in this work with the approach based on stress relaxation microscopy [1], constitutes a unique AFM-based experimental framework to study cell mechanics. This methodology can be extended to study the mechanical properties of biomaterials in general.