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Real-time screening system using living cells for chemosensitivity testing

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Abstract:

There is an increasing demand for cellular screening systems. For this purpose our research group has developed an automated highcontent online measurement system for living cells. The system is comprised of a pipetting robot, sensors for measurement of pH, pO₂, electric signals and cell adhesion, a digital microscope and a climate chamber. The robot is used for media supply, while the sensors monitor the metabolic and morphological parameters of the cells. Reflected light and fluorescence imaging during the course of an experiment are possible due to the included microscope. Sensors are integrated in a special 24-well micro plate that is placed at a fixed position within the system. Oxygen and pH values are usually measured every 5 to 15 seconds. Experiments over a long period of time (several days) are possible, making the system suitable for applications like pharmaceutical drug screening, in vitro chemosensitivity assays, toxicological studies and analytical histopathology.

Key-words: Real time cell based assays, chemosensitivity, drug screening, toxicology