

# Ion-beam treatment of glass substrates for creation of biomatrices

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## Abstract

**Background:** We investigated the possibility of using ion-beam processing to create biomatrix which is used to produce monolayer for cell cultures on a photo glass. **Methods:** Experimental setup with the Kaufman type ion source which produces beams of inert gases and nitrogen in diameter of 100 mm, with an energy in the range of 0.1-1.7 keV, ion current density to 500 mA/cm<sup>2</sup> has been used. **Results:** Hepatocytes of mice, which deposited on the glass surface after ion-beam treatment better adsorbed ( $2.8 \pm 0.2$  times higher) than the control (untreated) and exhibited the formation of cell aggregates. The number of human fibroblasts, which adsorbed on the matrix, in ( $1.5 \pm 0.5$ ) times exceeds number of cells than on a smooth glass. It has been established that fibroblasts have a normal configuration for this type of cell onto modified glass. It has also been shown that cells "Candida albicans" are 5 times more adsorbed onto the modified glass than on the control glass. **Novelty:** Extract of the hepatocytes of mice, which is incubated on a modified glass, contains protein fractions with molecular weights of 30, 43 and 120 kDa which are not present on the control sample.

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## Keywords

Adhesion, Cell culture, Fibroblasts, Glass, Hepatocytes, Ion-beam processing, Surface modification