

256a Effects of Nanotopography on Cellular Behaviors

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Tremendous interest has grown in the area of biotechnology to investigate the underlying effects of the nanosurfaces on the cellular behaviors. However, current research were not yet successful to conclude a general conclusion due to the lack in the in situ method that can be used to directly and continuously observe the cell interaction with the surface. Conductive polymer, on the other hand, is one of the most popular materials currently under investigation due to its excellent properties. One example is polyaniline(PANI), whose conductive property was currently improved with the success of PANI nanofiber synthesis. In this study, human derived astrocyte cell line was used to study the effect of PANI nanofibers on the cellular behavior and metabolism. Cell density, cell size, GDNF secretion, lactic acid production and glucose consumption were analyzed in this experiment. It was confirmed that protein adsorption regulate the cell adsorption. Furthermore, further result demonstrated that pretreatment of substrates with culture medium is necessary to improve cell adhesion and thus cell proliferation. In summary, it was found that nanotopographical surface do have effect on cellular behavior and metabolism. However, this effect was due to the adaptation cells need to make in order to survive in their environment and not necessarily good or bad.