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**Title: Peritoneal and Adhesion Fibroblasts are Different: Is it Clinically Useful?**

The key to reduction of postoperative adhesion development is a thorough understanding of normal peritoneal healing, and differences that are present when adhesions develop. To examine these processes, we have studied fibroblasts isolated from normal peritoneum and from adhesions of the same patients. Difference between these cell types can be characterized in general terms as manifestation of an inflammatory-like milieu in adhesion fibroblasts, which we have called the “adhesion phenotype”. The adhesion phenotype identified in these cell cultures is consistent with findings in animal in vivo trials, as well as human studies, thus validating this cell culture model as indicative factor regulating adhesion development in humans. Importantly, the adhesion phenotype can be elicited in normal peritoneal fibroblasts by culture under hypoxic (2% oxygen) conditions; similarly, the manifestations of the adhesion phenotype can be exacerbated by culture of adhesion fibroblasts under hypoxic conditions. These findings are also consistent with the increased generation of reactive oxygen and reactive nitrogen species observed in the adhesion phenotype, and in response to hypoxia. These molecular biologic studies help to explain the human in vivo observation made over a decade ago, that adhesion reformation occurs more frequently than de novo adhesion formation, and that it is harder to prevent adhesion reformation than de novo adhesion formation.