A NOVEL APPROACH TO UTERINE FIBROIDS AND THE POSSIBLE ROLE OF BISPHENOL A.

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Uterine fibroids are benign smooth muscle tumors that affect nearly 13.6 million women in the United States, resulting in 150,000-175,000 hysterectomies each year, but have no known cause. Studies from our laboratory and others have shown that there are differences in cell signaling and gene expression between fibroids and adjacent myometrial cells, with fibroid cells missing a “brake” in signaling, allowing estrogen to trigger an unregulated feedback loop leading to changes in cell growth and gene expression. The link between these differences in cells in tissue culture and in vivo fibroid formation is not clear. In the environment, endocrine disrupting compounds, such as bisphenol A, exhibit estrogenic effects and have been linked to fibroids. To date there have been no experiments published examining the direct effects of bisphenol A on uterine leiomyoma in cell culture, leaving a major gap in both bisphenol A and leiomyoma research. Our study has two aims: to investigate the role of bisphenol A in growth of uterine fibroids and to explore novel methods for growth of fibroids in culture. When exposed to bisphenol A in traditional cell culture, uterine fibroid cells increased proliferation in a dose dependent manner, but normal smooth muscle cells did not exhibit the same dose dependence. These results led us to investigate three-dimensional cell culture for growing uterine fibroid cells in a more true to life manner. We are now perfecting techniques for growing fibroid and normal smooth muscle cells in three-dimensional cell culture to use in future experiments.