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Characteristics, properties, and functionality of fetal membranes: An overlooked area in the field of parturition

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Human fetal membranes (or amniochorion membranes) are the innermost lining of the intrauterine cavity. Membranes are fetal tissue in origin, start developing when fetal growth begins and are constituted by amnion and chorion connected by collagen rich extracellular matrix forming the innermost layers of the intraamniotic cavity. Extracellular matrix (ECM) made of fibrous proteins embedded in a polysaccharide gel and various collagen types provide the architectural and structural framework of the fetal membranes respectively. From the point of conception, pluripotent stem cells that surround the fetus forming the amniochorion membranes are vital to fetal survival. The amniochorion membranes are composed of multiple cellular and stromal layers containing epithelial and mesenchymal stem cells.

Since the early 19th century, physicians and researchers alike have been using either amniochorion or intact fetal membranes for wound repair, as cell-based wound dressings can be beneficial in many settings. These cells are used in a variety of fields, forming organs in vitro, and improving wound healing in clinics. There are many different forms of commercially available fetal membranes that are both cryopreserved and dehydrated which are useful in various clinical situations due to the abundance of different stimulating factors. In obstetrics, the usefulness of fetal membrane ECM is restricted to filling gaps in the membrane to avoid premature rupture of membranes arising from fetal surgery. This lack of application is partly due to the poor understanding of the properties of amnion epithelial cells and other cells in their extracellular matrix. By understanding where these cells come from and what their uses are in other areas, we can get a better idea of how they will act in vivo.

Biography

Laura Fernandes Martin has been Graduated from 2011 as Biologist. In 2013 she received her Master's Degree in Pathology and in 2018 she received the Doctoral's Degree also in Pathology from Sao Paulo State University, UNESP. During her post-graduation, she Martin had the honor of realize a research internship at University of Texas Medical Branch with Dr. Ramkumar Menon to learn about his tissue science research. Presently she has been working at Sao Paulo State University (UNESP) – BRAZIL and the focus of her researches is on inflammatory and oxidative process in labor and the differences between preterm labor with intact membranes and premature rupture of membranes preterm.

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