

Laplace's Law and Pascal's Principle Dictate Birth Timing and Pregnancy Duration Through Exponential Uterine Wall Tension (EUWT) Where Its Malfunctions Alter Birth Timing and/or Mode of Delivery: A Hypothesis

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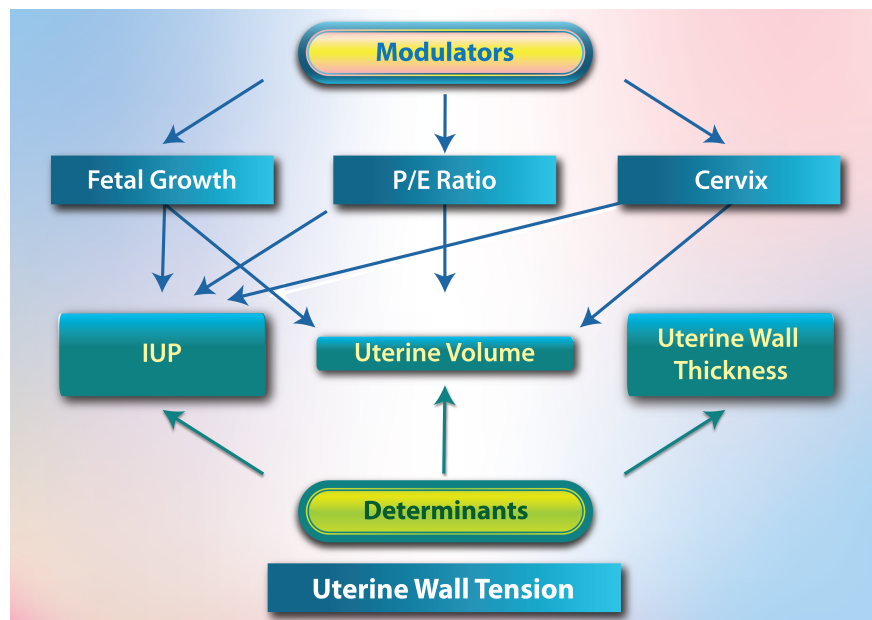
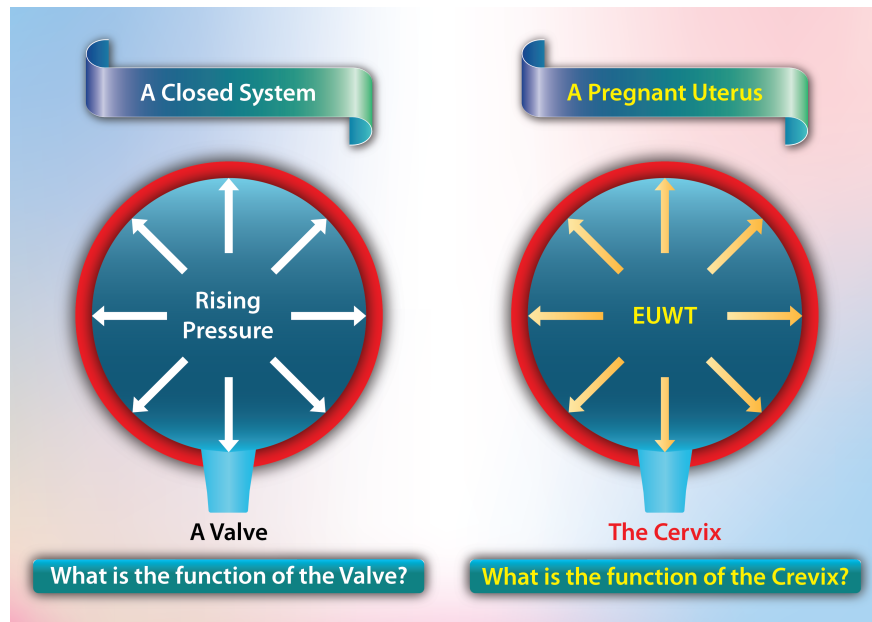
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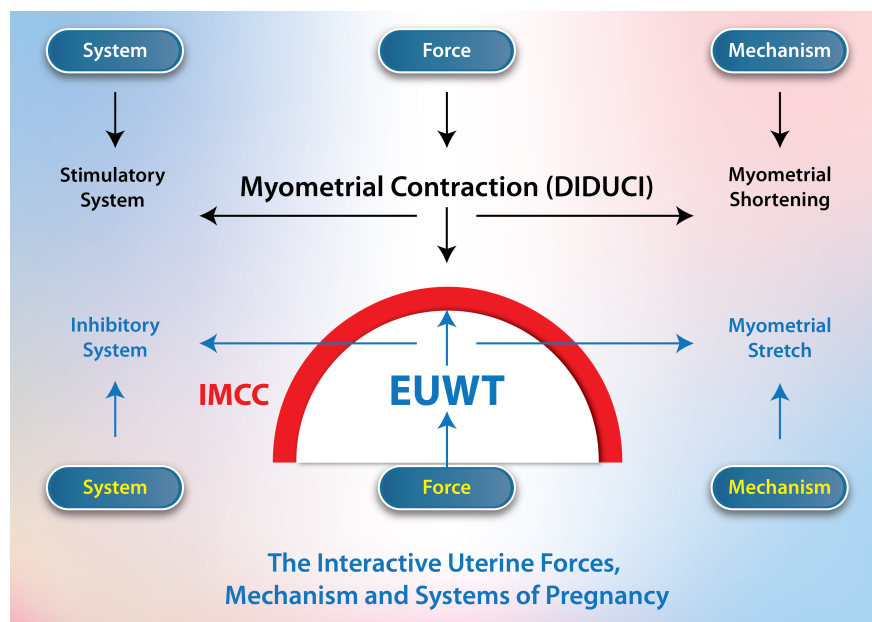
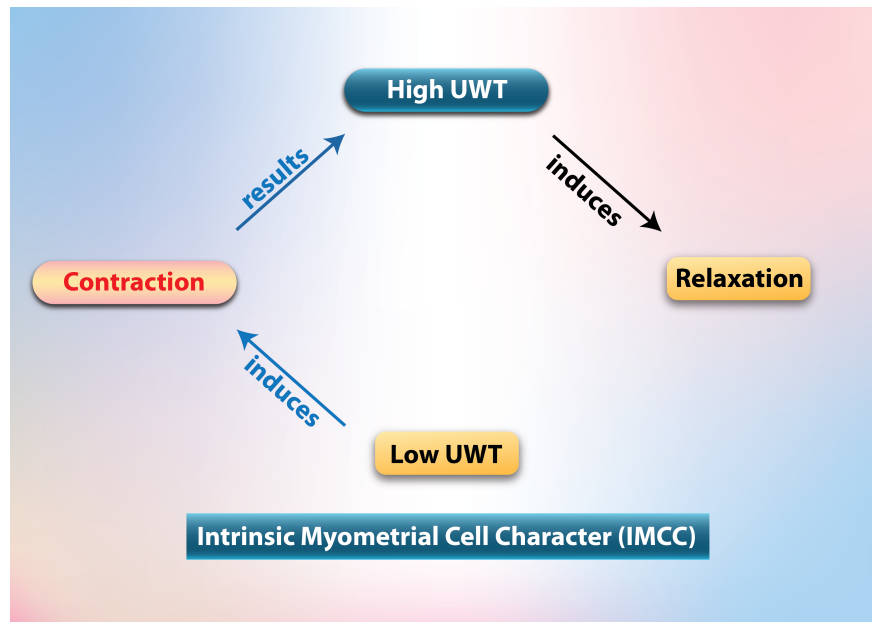
Abstract

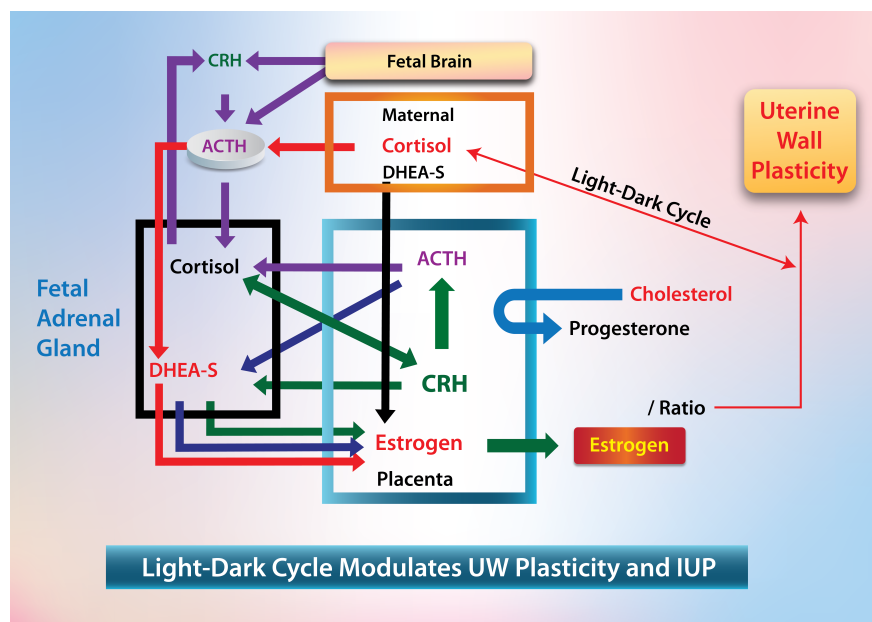
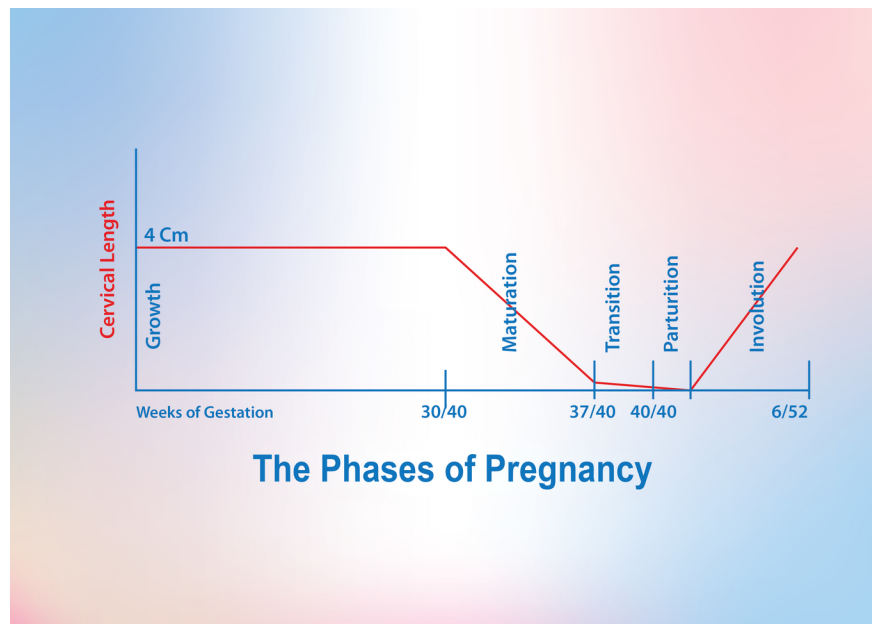
Background Failure to understand uterine function during pregnancy is a major shortcoming of healthcare. **Objective** To support the hypothesis and we would call it, Hegazy's Hypothesis for Gestation. **Study Design:** The thesis of this hypothesis is derived from a study that was carried out in Australia and published in PLOS in 2010. Sokolowski P et al. 2010. Human Uterine Wall Tension Trajectories and the Onset of Parturition. PLoS ONE 5(6): e11037. **Results** Pregnancy is a state of balance between the two opposing and interactive inhibitory and stimulatory systems secondary to EUWT mechano-transduction and Progesterone/estrogen stimulation. Pregnancy is mainly maintained through a stretch-dependent inhibitory system. Contractions of the stimulatory system transform the cervix into the lower uterine segment causing EUWT failure, which terminates the pregnancy. Light-dark cycle modulation of interactive inhibitory and stimulatory systems divides gestation into five clinical phases. Pregnancy interval and circadian timers are achieved by a single mechanism, namely EUWT failure, secondary to the complete loss of cervical strength nocturnally. Inhibitory system malfunction causes preterm labor, and most of the current therapeutic modalities for pre-term labor are focusing on delaying or preventing EUWT failure. Stimulatory system malfunction causes post-term pregnancy, and the combined malfunction of the two systems causes labor dystocia. **Conclusion** EUWT creation, autonomic maintenance, and autonomic EUWT termination make pregnancy an autonomic cycle with constant intervals and circadian timers. EUWT malfunctions alter birth timing and/or mode of delivery. Laplace's law and Pascal's principle measure EUWT which might be the laws of physics that genetically pregnancy duration.

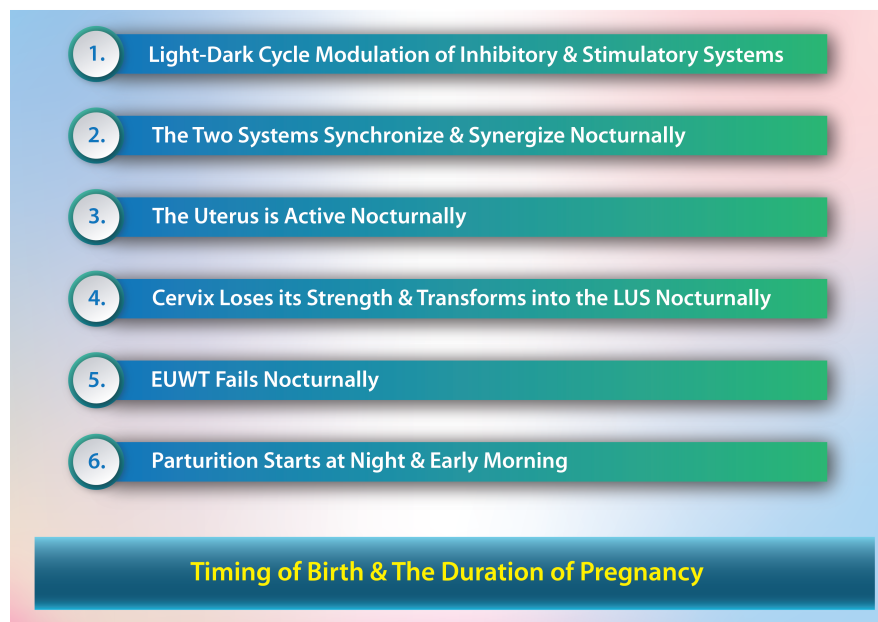
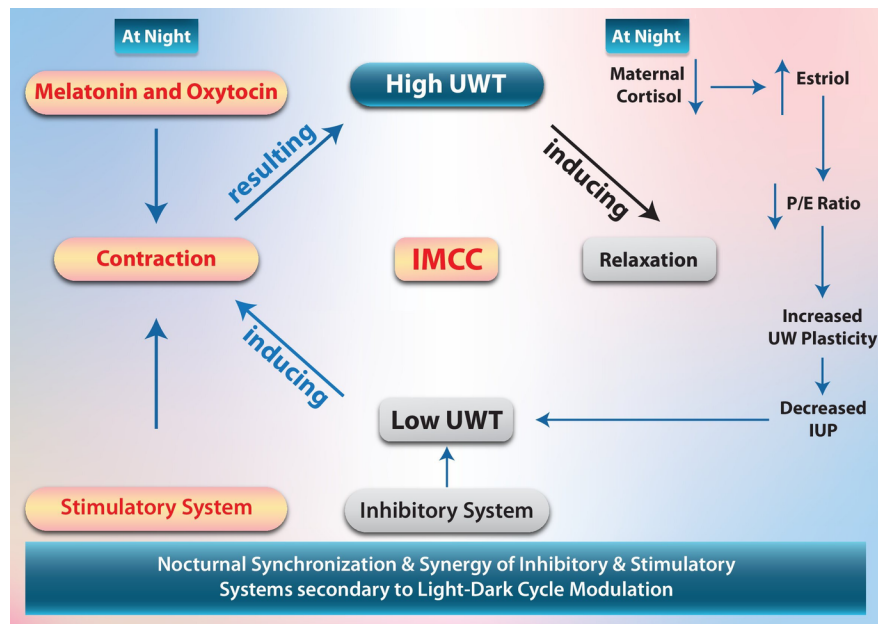
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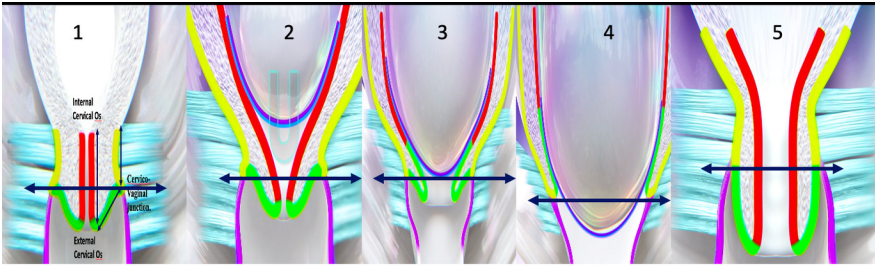
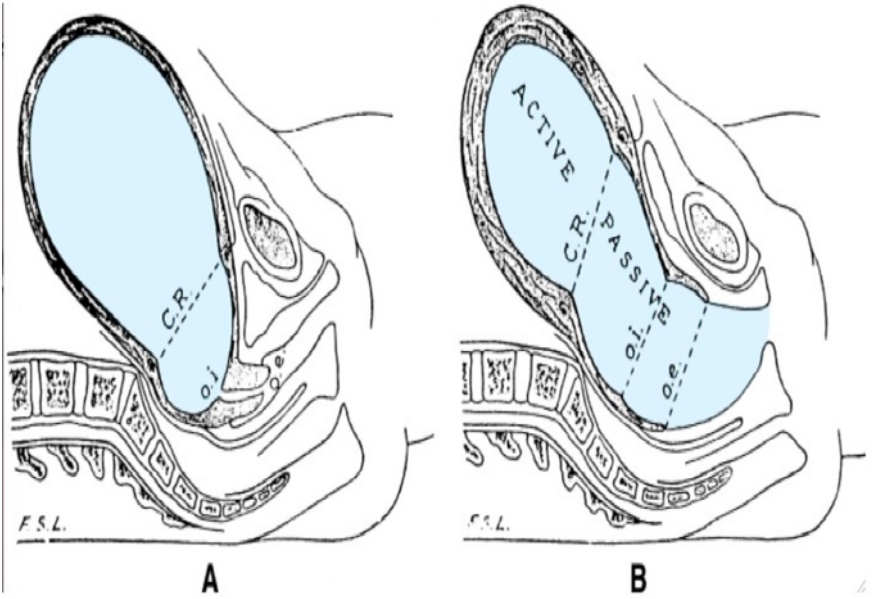
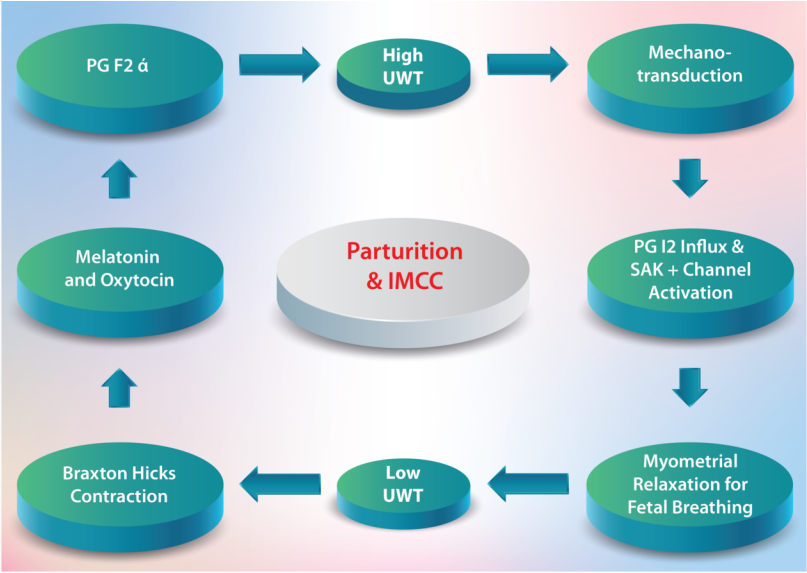
BJOG-Hegazy.docx available at <https://authorea.com/users/506021/articles/645734-laplace-s-law-and-pascal-s-principle-dictate-birth-timing-and-pregnancy-duration-through-exponential-uterine-wall-tension-euwt-where-its-malfunctions-alter-birth-timing-and-or-mode-of-delivery-a-hypothesis>

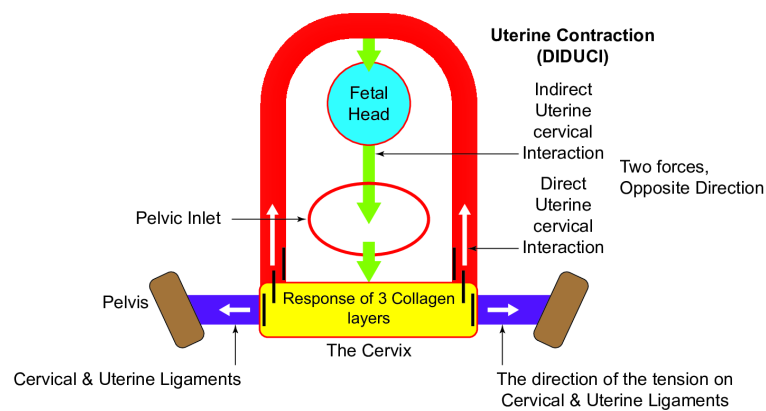












Mechanism of Development of TYVU pattern Secondary to DIDUCI