

Proponent Testimony of SB275  
For the Senate Education Committee  
Kansas Legislature  
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Chair Erickson and Members of the Committee, thank you for the opportunity to provide proponent testimony in support of Senate Bill 275, which would require school districts to include a fetal development presentation as part of the curriculum for any course that addresses human growth, human development or human sexuality.

I am providing written testimony on behalf of myself, a trained scientist with over 25 years' postgraduate experience in academics and clinical medicine with an emphasis on human development and the cause of childhood disease. I obtained a Ph.D. in Biochemistry from the Medical College of Wisconsin and fellowship training at Harvard Medical School and Boston Children's Hospital. I was an Associate Professor at the Medical College of Wisconsin, where I directed a lab that investigated heart disease in children and served as Scientific Director of Molecular Diagnostics at Children's Hospital of Wisconsin. I also served as Vice President and Director of Life Sciences at the Charlotte Lozier Institute and was Senior Editor of VoyageOfLife.com, a scientific website that educates on human development from conception to birth. I have also served as a member of the U.S. Department of Health and Human Services Secretary's Advisory Committee on Infant and Maternal Mortality.

Human life begins at fertilization (sperm-egg fusion) and the dynamics of human development are well-established based on centuries of biological discovery, technological advancement, and validated, objective science. Sadly, most school-aged children do not know basic facts of human development, the science behind their own existence and everyone around them.

For example, most children are not aware of the fascinating fact that the heart is the first organ to form and function in each developing human.<sup>1</sup> About 22 days after fertilization (6<sup>th</sup> week gestation), the heart starts to beat and pumps blood rhythmically<sup>2</sup> at 110 beats per minute!<sup>3</sup> By

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<sup>1</sup> Tan C, M, J, Lewandowski A, J: *The Transitional Heart: From Early Embryonic and Fetal Development to Neonatal Life*. *Fetal Diagn Ther* 2020;47:373-386

<sup>2</sup> Sadler, Thomas W., *Medical Embryology*, 14<sup>th</sup> edition, 2019. Page 181; and Hill, M.A. (2023, January 28), *Cardiovascular System Development*, Available at: [https://embryology.med.unsw.edu.au/embryology/index.php/Cardiovascular\\_System\\_Development](https://embryology.med.unsw.edu.au/embryology/index.php/Cardiovascular_System_Development)

<sup>3</sup> Murugan VA, Murphy BO, Dupuis C, Goldstein A, Kim YH. *Role of ultrasound in the evaluation of first-trimester pregnancies in the acute setting*. *Ultrasonography*. 2020 Apr;39(2):178-189. doi: 10.14366/usg.19043. Epub 2019 Oct 16. PMID: 32036643; PMCID: PMC7065984; and Hornberger LK, Sahn DJ. Rhythm abnormalities of the fetus. *Heart*. 2007 Oct;93(10):1294-300. doi: 10.1136/hrt.2005.069369. PMID: 17890709; PMCID: PMC2000955.

the end of the 6<sup>th</sup> week, the human heart will have already beat over 1 million times.<sup>4</sup>

The human brain also undergoes complex changes during development. Brain activity has been recorded in a developing human being as early as 45 days during the 9<sup>th</sup> week gestation,<sup>5</sup> and will continue to mature well into adulthood and is not complete until around 25 years of age! There are so many other fascinating facts and behaviors during pregnancy, such as the ability of the developing child to suck his or her thumb, yawn, cry, hear music, to feel and touch with unique fingerprints.

Education in human developmental biology lacks the scientific rigor students deserve, even though modern medicine and science reveal more about the beginnings (and uniqueness) of each human being from fertilization to birth than ever before.<sup>6</sup> This gap in knowledge creates a void in comprehensive curriculum focusing on human embryology and fetal development.

In summary, I strongly support SB 275. This bill addresses an urgent need for standards-based science education that reflects the truth of our human existence. SB275 is a crucial step toward providing accurate and basic human biology standards across your state, and a formidable opportunity for Kansas to serve as a leader in the nation. I encourage you to vote “yes” on this bill without hesitation.

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<sup>4</sup> “Prenatal Form and Function – The Making of an Earth Suit,” at Appendix A – Calculations (*The Beat Goes On – Tracking the Total Number of Heart Beats During Pregnancy and Beyond*), *The Endowment for Human Development*, [https://www.ehd.org/dev\\_article\\_appendix.php](https://www.ehd.org/dev_article_appendix.php) (accessed November 21, 2020).

<sup>5</sup> Borkowski, Winslow J., and Richard L. Bernstine. “Electroencephalography of the Fetus.” *Neurology* 5, no. 5 (May 1, 1955): 362. <https://doi.org/10.1212/WNL.5.5.362>.

<sup>6</sup> Charlotte Lozier Institute. (n.d.) *The Voyage of Life*. Retrieved from: <https://lozierinstitute.org/voyage/>