



The Sanctity of Human Life Confirmed in Scripture and Unveiled in Science

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Abstract

There is inherent dignity and value in every human life. This truth has been revealed to us in God's Holy Word and is supported by science. Human life and development are a continuum. It is a life-long process, which begins at conception and ends with death. A one-day-old human, called a zygote, is the same little girl or boy that grows into an eight week-old-embryo, a 15-week-old fetus, an infant, a toddler, a teenager, and an adult. Being in the earliest stages of human development does not disqualify an individual from being a genuine human being, nor should they be disregarded and considered as having less worth. And yet, the preborn are often regarded as not real human beings, providing justification for heinous activities, discrimination, and exploitation. Induced abortion at all stages of pregnancy, for any reason, is still happening on a large scale in this country. In addition, many girls and boys are specifically targeted for abortion just because they have been prenatally diagnosed with a fetal anomaly or severe condition such as Down syndrome or Trisomy 18. The topic of when life begins spans across many disciplines and can impact Christians at many levels in the areas of reproduction, biomedical research, and medical therapies. Many Christians who care deeply about human life and seek to do God's will are struggling when it comes to making important decisions related to beginning of life. How do we as Christians approach sanctity-of-life topics in our culture, in our church and community when they impact us, our loved ones, and fellow believers in Christ? This essay dives into the sanctity and science of human life and fetal development, to equip and educate the church when applying such truths in the real world.

God, the Creator and Author of *All* Life

On the sixth day of creation in the Garden of Eden, God created the first human beings, Adam and Eve. He said, “Let us make man in our image, in our likeness, and let them rule over the fish of the sea and the birds of the air, over the livestock, over all the earth, and over all the creatures that move along the ground. So, God created man in his own image, in the image of God he created him, male and female...” (Gen. 1:26–27).¹ And it was good.

And then again, after the fall of Adam and the flood, God made a covenant with Noah, reminding him that man was made in the image of God and that Noah’s family must be fruitful and increase in number to repopulate the earth (Gen. 9:6–7). God said, “... for in the image of God has God made man... be fruitful and increase in number, multiply on the earth and increase upon it” (Gen. 1:27–28). Even in a world broken by sin, God’s divine plan and design is for human beings, who are created in the image of God, to increase in number.

Scripture makes it clear—human beings, created as either male or female, *are* special and distinct from all other created and living things on this earth. “[W]hat is mankind that you are mindful of them, human beings that you care for them? You have made them a little lower than the angels and crowned them with glory and honor. You made them rulers over the works of your hands; you put everything under their feet” (Ps. 8:4–6). There is sanctity and dignity in every human life. Such biblical truths are the fundamental basis for every human rights issue and treatment of human beings in a civilized society [CMD].

Human beings are masterpieces of God, fearfully and wonderfully made. In Psalm 139, King David sings praise about how he and all others are created inside a mother’s womb. David acknowledges that God knows each of us intimately because He carefully hand-crafted us according to His perfect will. “For you created my inmost being; you knit me together in my mother’s womb. I praise you because I am fearfully and wonderfully made; your works are wonderful, I know that full well. My frame was not hidden from you when I was made in the secret place, when I was woven together in the depths of the earth. Your eyes saw my unformed body. All the days ordained for me were written in your book before one of them came to be” (Ps. 139:13–16).

¹ All Scripture references in this article are from the New International Version.

Human beings are not on this earth by mere coincidence. Each human being is created with purpose by our omniscient, omnipotent, perfect, and loving God. We all came into being as humans because God intended it to be so, and it was done. When God called Jeremiah to be a prophet, He said that his existence was a preordained plan: “Before I formed you in the womb I knew you, before you were born I set you apart; I appointed you as a prophet to the nations” (Jer. 1:5).

As our creator and sustainer, God alone determines the day we come into being and the length of our life. “All the days ordained for me were written in your book before one of them came to be” (Ps. 139:16). As Hannah proclaimed after God gave her a son, “The Lord brings death and makes alive, he brings down to the grave and raises up” (1 Sam. 2:6). And Job prayed to God when questioning his own mortality and pain, “Your hands shaped me and made me, will you now turn and destroy me? Remember that you molded me like clay. Will you now turn me to dust again?” (Job 10:8). The Lord is sovereign over all—He giveth life and He taketh life, according to His divine will and plan.

Children from the moment of conception are God’s and His alone. Any time an innocent human life is taken outside of His will, it is disobedience and sin. It is no wonder, then, that God detests the shedding of innocent blood. When the Israelites were offering their own children up as sacrifices to an idol, He reminded them that they were His children, and they had no right to do such horrible things: “...you took your sons and daughters who you bore to me and sacrificed them as food to the idols. You slaughtered my children and sacrificed them to idols. In all your detestable practices and your prostitution you did not remember the days of your youth, when you were naked and bare, kicking about in your blood” (Ezek. 16:20–22). And then God says, “Any Israelite or any alien... who gives any of his children to Molech must be put to death.... [F]or by giving his children to Molech, he has defiled my sanctuary and profaned my holy name” (Lev. 20:1–3).

The killing of children and shedding of innocent blood angers and provokes God; such things are detestable in His eyes. Therefore, the Christian’s attitude toward human life should be one of reverence and awe. The intent to deliberately terminate an innocent human life, especially an innocent child inside the womb, falls outside of the will of God, is evil and blasphemous to Holy God.

The Science of When Human Life Begins

The sanctity of human life stands firm on Scripture alone, but science unveils the undeniable humanity of the unborn child and supports the inerrant Word of God. It is a scientific fact that from the moment of fertilization, also known as conception (when the sperm fuses with the egg), there is the creation of a new, totally distinct, human being (a child), biologically distinct from all other life forms in the world [CLIC]. The dynamics of fertilization and human development are well-established from centuries of biological discovery, technological advancement, and validated, objective science. Indeed, most biologists (96%) agree that all human life begins at conception [Jac19]. The *Carnegie Stages of Human Development*, first established in 1942, are *the* standard used by all embryologists to describe human embryo development (cf. Carnegie stages 1–23) [NMH]² The very first stage of human development, Carnegie Stage 1a, is marked by the moment of fertilization [OM87].

The study of human embryology (early human development) informs us that the youngest human being, the embryo, is called a zygote. The zygote is a single-celled human organism at the start of his or her life's journey. That single cell will divide and multiply—first two cells, then four cells, then eight cells, and so on. By the time a human being is a fully developed adult, each person will be made up of 30–40 trillion cells that make up the tissues and organs of the entire body [BPF⁺13]. The newly created single-celled human (the zygote) contains every instruction necessary to develop to more mature stages of human life [Con14]. This organized, coordinated behavior is the defining characteristic of a human organism [Con14].

Ovulation and fertilization occur about two weeks after the woman's last menstrual period. By three to four weeks, the developing embryo will have already traveled to the uterus and embedded into the uterine wall of his mother in a multi-day process called implantation. Almost immediately after implantation, the hormone called human chorionic gonadotropin (hCG) can be detected with over-the-counter urine pregnancy tests. And by six weeks, cardiac activity can be detected

² Embryologists date pregnancy from the start of fertilization, known as the “post-fertilization” date. Unless otherwise noted, the age of the preborn for the remainder of this manuscript will be based on gestation age, which dates pregnancy based on the woman's last menstrual period, approximately two weeks greater than post-fertilization age (e.g., a human embryo at four weeks' post-fertilization is approximately six weeks' gestation in pregnancy).

in the embryo by transvaginal ultrasound.

A new human being is called an embryo for the first ten weeks of pregnancy and a fetus from 11 weeks until birth. The age of an unborn child can be calculated in two different ways. Doctors usually date a pregnancy from the start of the mother's last menstrual period, called the gestational age. But pregnancy biologically starts at fertilization. So, if a doctor tells a woman that she is six weeks pregnant, then that means that the unborn child has been developing inside her mother's womb for about four weeks since sperm-egg fusion (fertilization/conception).

The new human life that is developing inside the womb of the mother is the same person that will be born and live in the world. Does the child magically become a human being or baby only at birth? Of course not. Human development is a continuum. A one-day-old human called a zygote at conception is the same little girl or boy that grows into a six-week-old embryo, a 15-week-old fetus, an infant, a toddler, an adolescent, and an adult. Being in the earliest stages of human development before birth does not disqualify an individual from being a genuine human being, nor should they be considered as having less worth at any stage along the life journey.

Science shows us that the process of human development is on a growth scale marked by numerous key stages or events that occur during and after pregnancy. Human development does not suddenly stop once a child is born. There are several human systems that remain underdeveloped and continue to grow and mature after birth. For example, the circulatory system, heart, and lungs undergo considerable change and function differently before and after birth. Before birth, the fetal circulatory system uses shunts, like highways, that direct blood flow and bypass the lungs [SMC]. Two of these shunts (the foramen ovale and the ductus arteriosus) develop in the prenatal heart and then close *after* birth to prepare for newborn blood circulation. The fetal heart does not look and function the same as an adult heart, nor is it supposed to. In addition, a human being under the age of three has a thin skull with only one layer [LPL⁺15]. As we age, the skull gets thicker and develops three layers.

The brain also undergoes complex and life-long changes and is built to change over a lifetime [Gil23]. Critical stages of brain maturation occur during fetal development, early childhood, and adolescence. Brain activity has been recorded in the unborn as early as 45 days during the ninth week of gestation [BB55], but it is

a well-known fact that the frontal cortex continues to mature well into adulthood and is not complete until around 25 years of age. Do we suggest that a toddler or teenager does not actually have a true brain until full maturation is complete? Are they somehow less human? Again, the answers are emphatically no.

The intrinsic worth of a human being is not governed by a person's developmental stage, abilities, organ function, or capacity to do certain things. If that were so, then newborn babies, toddlers, people with disabilities, and anyone whose human body is not fully "functional" or is dependent on another, might not be a *real* human being. Instead, each person is designed and hand-crafted by God, and all He does is good, including the moment that new individual comes into being at conception. *Every* human being is created with a purpose, has intrinsic value, and worth—both before and after birth.

DNA and Genetic Variation: The Creator's Unique Design of Each Human Being

A unique human being forms at fertilization [[Sad18](#), [Con14](#), [OM87](#)] when a man's sperm fuses with a woman's egg creating a zygote, a single-celled human embryo that will become a 30-trillion cell adult [[HG00](#)]. From the moment of conception, a new human being contains a complete and unique set of genetic information that determines his or her physical traits, form, and range of abilities—everything needed to grow, mature, and function, for the rest of his or her entire life. God designed human beings in such an incredible way that there is enough genetic variation that no two humans have been, or ever will be, genetically identical [[oHUBSCSNCSSto7](#)]. Thus, each human is unique and "one of a kind" from the moment of conception. It's nothing short of a miracle. How can that happen?

DNA is one fundamental tool used by God our creator to make human beings distinct. DNA is in all living things and is passed on from generation to generation, passing distinct characteristics and traits to offspring. The DNA sequence produces the genetic variation that creates a person's biological individuality, including sex, eye color, and other physical traits. The genome of each unique human being is a blueprint or instruction book, ensuring that during development the heart beats at the right time, that eyes form on the front of the face, that bones grow inside the body, and that ears connect to the brain so that he can perceive his mother's

voice and the world around him. Every system in the body forms and functions according to a self-directed plan starting at fertilization and lasting for a lifetime.

DNA consists of four different nucleotides (A, G, C, T) that join on a single strand and make a sequence. DNA is normally found as a double-stranded molecule, in which two separate DNA strands are wound around each other to form a double helix, and each nucleotide of one strand forms a base pair with the nucleotide of the opposite strand. In the same way that 26 letters of the alphabet combine to create a countless number of words and sentences for communicating, so it is with DNA. The four nucleotides combine in diverse ways to create various sequences, called genes, which are fundamental units of genetic information that provide specific instructions for life.

In 1958, three thousand years after King David wrote Psalm 139, prominent scientists Watson and Crick discovered the structure of Deoxyribonucleic acid (or DNA). Their discovery confirmed that we are *literally* knit together in our mother's womb, as proclaimed by King David in Psalm 139. In their book *The Double Helix*, Watson explains how Crick announced the DNA discovery by blurting out, we "...found the secret of life!" [Wato1] What they discovered is that the structure of DNA, the blueprint of each human life, is tightly woven together in a stable structure in the form of two strands, like ribbon. One DNA strand is from mom, the other from dad. At conception, the two different strands of DNA become one, creating a new human being like no other. Marriage is described in an analogous way by Christ, "...and the two will become one flesh" (Mark 10:8).

Both the sperm and the egg are alive and have 23 chromosomes each that combine during fertilization to form a unique set of chromosomes. The newly conceived human being will have 23 pairs (46 total) of chromosomes numbered 1–22, plus a sex chromosome X or Y. One set came from that person's father, the other from her mother. The 23 pairs of chromosomes can be reorganized together in eight million unique ways, so each parent could produce eight million genetically distinct sex cells [Balo1]. The probability of there being two identical children from any two parents in the population is 6.27 billion to one!

It's fascinating that the male sperm and female egg contain only half as much DNA material needed to create a new human being—only one copy of each chromosome. And it's only when the union of the male and female DNA occurs during fertilization that the complete content of DNA is restored for the beginnings of a

new human life. Another fascinating fact is that there are about three billion nucleotides for each copy of DNA, so six billion nucleotides total per person. If all the DNA in any adult human body were unraveled like a string, it would exceed 63 billion miles in length, which is comparable to 340 round trips from the earth to the sun and back! In fact, the probability that two non-twin siblings have the same combination of chromosomes is one in seven trillion [Bal01]! Even identical twins, who begin life from a common egg-sperm pairing, often have small genetic differences, called copy number variations, in which one small section of DNA gets copied more than once [BPG⁺08].

Humanity of the Unborn Child Unveiled with Ultrasound

In many ways, the obscurities of pregnancy in the past prevented many from understanding what science already knew of the humanity of the unborn—until ultrasound technology gave a clear picture of the little girl or boy developing inside their mother’s womb. Fifty years ago, a baby could barely be visualized inside the womb with static, grainy, ultrasound images. Rapid developments in the 1970s and 1980s led to real-time and transvaginal ultrasound scanning, followed by Doppler imaging, and then 3D and 4D imaging [Zen23, Cam13, BD14]. Today, we have an unobstructed view inside the womb. Such discoveries have unveiled with clarity the humanity of the unborn child—little girls and boys that have formed faces, fingers, toes, and even suck their thumb. Ultrasound provides a window into the womb and unveils the little girl or boy whom God is creating. Perplexity has turned to illumination with the gift of ultrasound.

With advancements in ultrasound and a clear view into the womb, fetal malformations are now able to be diagnosed with greater precision, and life-saving treatments are available before birth. Modern pain research has also confirmed that, contrary to our previous understanding, the unborn do feel pain. This is why the unborn are given anesthesia before surgical procedures—to relieve their suffering during a painful procedure.

To say we have come a long way in medical advancement over the course of 50 years is an understatement. Modern medicine and science tell us more about the development and humanity of each child during pregnancy than ever before in

history. Because of scientific discovery, we know that exceedingly early on, during the embryonic period (from the time of conception until the end of the tenth week of gestation), almost all the body parts and organ systems form, become visible, and start to function, including the heart.

The First Heartbeat and Brain Activity

The heart is the first organ to form and function in the developing human embryo [TL20]. The heart is a vital source for circulation of nutrients and oxygen-carrying blood once the nutritional requirements of the embryo can no longer be met by diffusion from the placenta alone [Hil]. About 22 days after fertilization (week six of gestation), the heart starts to beat (pumps blood) rhythmically [Sad18, p. 181], [Hil]. The heart beats around 110 beats per minute at 6.2 weeks, increasing to approximately 159 beats per minute at 7.6–8.0 weeks, and peaking during the ninth week to twice the heart rate of the mother's at over 170 beats per minute [MMD⁺20, HSo7].

By the end of the sixth week, the human heart will have already beat over one million times, by seven weeks almost 2.5 million times, and by the ninth week over five million times. This same heart will beat 54 million times before birth, and over 3.2 billion more times into adulthood, constantly pumping blood through the entire human body for a lifetime [EHDC]. Even at this early embryonic stage, the heart has begun to form primitive heart valves that act as physical barriers that prevent the backflow of blood through the heart tube and assist in the forward propulsion of blood as it is pumped through the heart and out through the rest of the body [CY09].

The early embryonic heartbeat is detected using doppler transvaginal ultrasonography [MMD⁺20]. This measures the movement of the beating heart. Ultrasonography does not measure electrical activity; it measures pulses of high-frequency sound reflected off solid objects—that is, the heart pumping blood. The remarkable image of a beating heart from a living human embryo in the sixth week of gestation (four weeks and four days post-fertilization) has been captured on video [EHDB].

The heartbeat is a strong indicator and marker of health, and the absence of a detectable heartbeat is diagnostic of pregnancy failure [MMD⁺20]. Fetal heart rates less than 100 beats per minute before 6.3 weeks are linked to an increased

rate of embryo death [MMD⁺20]. Researchers have found that the presence of a heartbeat at six to eight weeks indicates that the unborn child has a very high chance of surviving to childbirth, sometimes as high as 98%, and overall prognosis improves with increasing heart rate [HFK04]. And yet, in a recent survey, one in six adults who attend a worship service at a Christian church at least once a month “admitted to having ever paid for, encouraged, or chosen to have an abortion,” illustrating the urgency of clear, biblical thinking, and not being deceived [Bar23, Fol23]. Furthermore, the diagnosis of multiple gestations relies upon the detection of an early heartbeat. If two embryos are visualized by ultrasonography, the chance of successfully delivering twins increases from 57% to 87% if cardiac activity is detected in both embryos by six weeks [RLM⁺19].

The heart is vital to the continued growth of the unborn child. The early heart at six weeks of gestation may not be a four-chambered heart yet, nor should it be at this stage. The human body is always in a constant state of change. The prenatal heart organ is still moving, pumping blood, beating rhythmically, and circulating essential nutrients through the embryo.

By the end of the sixth week, the brain is developing. The neural tube, which gives rise to the spinal cord and brain, has closed and the brain has divided into three primary sections: the forebrain, midbrain, and hindbrain [Vof23a]. By the end of the seventh week, the brain has separate right and left cerebral hemispheres [Vof23b], and a cerebellum. The cerebral hemispheres will direct speech, decision making, movement, balance, vision, memory, and many other functions. The cerebellum will control muscle coordination. The brain undergoes complex and life-long changes. Some of the most important stages of brain maturation occur during fetal development, early childhood, and adolescence. Brain activity has been recorded in the unborn as early as 45 days, during the ninth week gestation, but it is a well-known fact that the frontal cortex continues to mature well into adulthood and is not complete until around 25 years of age.

By ten weeks of gestation, she will already have over 90% of the more than 4,500 named structures in the adult body including arms, legs, fingers, toes, a face, and eyelids [EHDA]. She will also bring her hands together, touch her face, and suck her thumb, with a preference for her right or left hand. It is truly remarkable how various methods of scientific study, including ultrasound, have provided such insight into the complexities of an unborn child’s heart and brain. But advancements

in science and ultrasound have also unveiled another facet of human development: fetal pain.

Fetal Pain

There is substantial new medical scientific evidence that an unborn child can experience pain and consciousness early in the womb—definitely by 15 weeks of gestation and possibly even earlier [Fur21]. Modern medicine indicates that early assumptions about fetal pain were wrong. Dr. Stuart Derbyshire, one of the world’s leading neuroscientists, published a major study in 2010 placing the onset of fetal pain at approximately 24 weeks [Der10]. By 2020, the weight of new scientific evidence caused Dr. Derbyshire and other scientists to conclude that unborn babies can experience pain by at least 15 weeks, possible as early as 12 weeks [DB20]. Furthermore, a functioning cerebral cortex is not required for the fetus to experience pain [Boc21]. Science shows that the unborn start to develop sensory touch receptors as early as seven and a half weeks and by the fifteenth week, the baby is extremely sensitive to painful stimuli [CLI22a].

The current standard of medical care calls for unborn babies to receive pain medication during fetal surgery starting at 15 weeks [SGBC⁺16]. Life-saving surgeries performed *in utero*, using pain medication, include treatment for twin-to-twin transfusion syndrome and spina bifida [Bel21]. Cutting-edge 4D ultrasound studies confirm that the fetus, when subjected to painful stimuli, reacts with recognizable facial expressions consistently linked to a conscious experience of pain. For example, a well-controlled study published in January 2021 demonstrated that fetuses undergoing injection of anesthetic into the thigh prior to a painful surgical procedure at approximately 31 weeks of gestation make facial gestures (grimacing, etc.) that are specifically associated with a conscious pain experience from the injection, with such gestures not occurring either at rest or after a “startling” stimulus [BCH⁺21].

Applying Biblical Truths to Beginning of Life Topics

There are numerous topics related to the beginning of human life that affect each of us in many ways. Any decision related to human conception and pregnancy has far-reaching, real-world application. The most recognizable topics are abor-

tion, contraception, infertility, and assisted reproductive technology including *in vitro* fertilization (IVF), surrogacy, gamete donation, sperm or egg freezing, embryo storage, and embryo adoption. For example, the IVF procedure involves the fertilization and creation of several living embryos outside the womb in a laboratory. There are life-affirming options available to the couple. Living embryos at the blastocyst stage (approximately five days old) may be transferred to a woman's uterus for potential implantation and pregnancy. Measures can be taken to limit the number of eggs retrieved and subsequently fertilized to avoid the difficult decisions that come with excess embryo production. Alternatively, excess embryos that are not desired for implantation by the couple may be donated to another couple for adoption through embryo adoption (snowflake babies).

Excess embryos generated in fertility clinics via *in vitro* fertilization, not destined or desired for implantation, may be stored indefinitely, or donated for research. Such practices are wrought with controversy, because when the embryos are donated to research, they are often used by scientists to isolate human embryonic stem cells (hESC) from the inner cell mass of a five-day old human embryo at the blastocyst stage to establish cell lines for experimentation and drug development. During this process of hESC generation, the living human embryo is disrupted and destroyed.

As couples consider these options, they may also feel pressured to undergo an IVF procedure that produces a large number of human embryos that cannot all be transferred at the same time and some must be frozen. Although the fertility specialist may give practical reasons for producing many human embryos in one cycle, the fact is that freezing and thawing decreases the embryo's chance of survival and can lead to death. To put this in everyday terms, this is analogous to illicit drug use during pregnancy, which increases risk of injury and death to the baby developing inside the mother's womb. Drugs are not good for the baby, so the mother should not use them during pregnancy. In the same way, freezing and thawing is not safe and could cause serious harm to the young human embryo that will be transferred to the mother's womb, so it should be avoided. For these reasons and more, the Christian is strongly encouraged to think deeply and seek wisdom beyond their doctor or fertility clinic, as they prayerfully consider God's plan for their family.

Another more nuanced topic involves the unethical use of tissues and organs (eyes, lungs, kidneys, liver, thymus, brain, heart, etc.) from recently aborted fe-

tuses in science experiments (human fetal tissue research). Several comprehensive reviews have been published by the Charlotte Lozier Institute on the science, legality, and ethics of fetal tissue research and its impact on society [LFS⁺20, FTR]. The reports reveal the continuous and gruesome practice of collecting, trafficking, and using fetal tissue and organs from elective abortions for use in biomedical research [CLI19, Sul15]. Human embryonic and aborted fetal-derived research are unnecessary in biomedical research for developing novel treatments of disease. There are better, more successful, scientific alternatives available to researchers that are ethical and do not rely on the deliberate destruction of any human life. And some of these ethical alternatives, such as adult stem cells donated from living and consenting adults, are treating disease and saving many lives now [Ste].

A topic related to, but distinct from, stem cells and human fetal tissue research is the area of vaccines using human fetal cell lines. The field of vaccine research has undergone much debate and controversy especially in recent years because some vaccines (e.g., for Rubella, COVID, Chicken pox, etc.) are developed, tested, and/or produced using human fetal cell lines from past abortions. For more information on how fetal cell lines are distinct and different from aborted fetal tissue, please refer to the fetal cell line fact sheet at the Lozier Institute [CLI20]. The decision of whether to accept a vaccine or treatment that relied on the destruction of a human being, at any point in the development or production process, is difficult and deeply personal. The Apostle Paul wrote to the Corinthians about the Believer's freedom in Christ and whether to eat food sacrificed to idols. He advised them, "...whether you eat or drink or whatever you do, do it all for the glory of God" (1 Cor. 10:31). "But be careful, however, that the exercise of your freedom does not become a stumbling block to the weak" (1 Cor. 8:9). Paul is emphasizing that we have freedom in Christ, but we must not do things that cause our brother or sister to fall. For Christians with moral objections against the use of fetal cell lines in vaccine production, it is appropriate (and encouraged) to request a vaccine not made with fetal cell lines when available. When an alternative is not available, it is important to educate and advocate for vaccines not produced using controversial fetal cell lines that may be objectionable to some.

Other bioethical challenges include the experimentation and manipulation of human embryos in areas such as human cloning, generation of 'synthetic' human embryos without sperm or egg, genome-editing, human-animal chimeras, three-

parent embryos, and artificial womb technology [LS22, SL22, LS23]. It's important to recognize that any nascent (newly created) human being, whether bioengineered, genetically modified, or produced using artificial means, has the essential physical nature and properties of human beings conceived by natural processes. As described in [Con14], science shows that human life begins when one organism possessing a full complement of human DNA produces "increasingly complex tissues, structures, and organs that work together in a complicated way.... as it directs its own development to more mature stages of human life." As remarked earlier in this article, this organized, coordinated behavior is the defining physical characteristic of a human organism. In God's design, this naturally arises from a single cell as the fusion between a sperm and egg, but scientists have discovered other artificial ways to create a human organism with these same properties. Therefore, human beings conceived by scientific bioengineering are no less human than those conceived by natural processes. Consequently, they have moral significance, and they require the same bioethical considerations before use for biomedical experimentation.

Beginning of life issues are intensely debated and discussed across many sectors, particularly in ethics, politics, and science. But at the most rudimentary level, each person is at risk of at least one of these issues impacting us, or our loved ones, at some point in our lives. They affect us deeply and spiritually in our search for answers and seeking God's will. Considering these issues involves questions such as, "Is abortion *ever* necessary to save the life of a mother, in cases of rape, incest, or severe birth defects?" Regarding infertility, people question if it is good to undergo special medical treatments like *in vitro* fertilization (IVF) or *in utero* insemination (IUI) to try and conceive a much-desired biological child. Or, if a couple cannot have a biological child of their own, even with the assistance of reproductive technologies, is it right to accept another person's donated eggs, sperm, or adopt a human embryo? In the case of trying to prevent and treat disease, is it ethical to accept a new medical therapy that uses embryonic stem cells taken from destroyed living human embryos or aborted fetuses? Is a vaccine acceptable that was deliberately manufactured and produced using cells taken from the body of an aborted baby? Should human embryos be genetically modified if the goal is to eliminate devastating genetic diseases such as sickle-cell anemia or cystic fibrosis, even if it means the modification is heritable (transmissible to offspring) and will affect

future generations? What should a scientist do if they are asked to participate in research that involves the destruction of human embryos?

Questions like these are weighing on Christian hearts and minds. But it is difficult to address each one well in this essay. The reader is encouraged to go to the Charlotte Lozier Institute website to refer to the research of various scholars related to these topics and many others [CLib]. The next section, however, will touch on one of the biggest of these issues: abortion.

Abortion

Abortion is the most divisive beginning of life topic. Induced abortion usually involves intentionally terminating the pregnancy by forcibly ending the life of an otherwise healthy, growing baby. Most abortions are for elective reasons with no medical indication [Lon23]. Globally, more than 73 million abortions are estimated to occur each year [BPG⁺20]. Based on abortion surveillance data, there were 620,327 abortions in the United States in one year (2020) according to the Centers for Disease Control (CDC) [KNM⁺22] and 930,160 per Guttmacher Institute [Gut22]. These annual statistics are estimates at best, since reporting of abortions and its complications is completely voluntary in the U.S. Planned Parenthood performs most abortions, reporting 374,155 abortions in one year (2020–21) [CLI23a].

A spontaneous abortion, also called a miscarriage, is very different from an induced abortion. Unlike abortion, a miscarriage is a natural pregnancy loss before the twentieth week. Treatment for a miscarriage involves removing the remains of a baby that has died naturally. Treatment for an ectopic pregnancy is also different from an induced abortion. An ectopic pregnancy is a complication in which the baby implants someplace other than the uterus, often in the woman's fallopian tube, which can cause life-threatening bleeding and complications for the mother [AAP10, CLI23d]. In most cases, the baby cannot survive and must be separated from the mother. The intent is never to intentionally end the baby's life. On the contrary, when performing an induced abortion, the sole intention is to purposely end the developing human life and remove a dead baby [AAP22].

There are two main types of procedure used in an induced abortion—surgical and chemical [WA21]. A surgical abortion can be completed at any time during pregnancy, but the kind of surgical procedure performed differs depending on the

stage of pregnancy. During the first 12 weeks of pregnancy (the first trimester), a dilation and curettage (D&C, suction/aspiration) procedure is most often performed. A D&C procedure pulls the baby out of the uterus using high-powered suction. Most abortions during the second trimester (13–25 weeks of pregnancy) use the dilation and evacuation (D&E) or dismemberment abortion method [AAP16]. A D&E procedure involves stretching and forcibly opening the woman's cervix and then using surgical tools to dismember and pull the baby out, piece by piece. A late-term abortion during the third trimester uses an intact D&E method or “partial-birth” abortion. This procedure is typically done after the point of viability when the baby is almost fully developed and is likely to survive outside the womb. This method attempts to pull the baby out in one-piece as a breech (feet first), then crushes the baby's skull inside the womb so it will fit through the cervix [CLI22b]. There have been cases of failed surgical abortions in which a woman delivers a live baby, called abortion survivors [CLI23b]. But in most cases the surgical procedure results in the death of the baby.

A chemical abortion³ is performed during the first trimester (usually under 10 weeks of gestation) and accounts for approximately 60% of all abortions. The method typically involves two drugs [CLIA]. The first drug (mifepristone, also known as RU-486) blocks progesterone, a natural hormone in the mother's body necessary for continuation of pregnancy. When the normal activity of progesterone is blocked by the abortion drug, the baby is starved of nutrients and dies. The second drug (misoprostol), given a day or two after the first drug, causes contractions with heavy bleeding and cramping, which induces delivery of the dead baby.

In the case of chemical abortion, if a woman changes her mind after taking the first drug of the abortion pill protocol, there is hope, and a bolus of natural progesterone can be given to try and counter the effect of the abortion pill. This procedure is known as abortion pill rescue or abortion pill reversal (APR) [APR, APH, CLI21]. Over 4,000 babies have been saved by APR [APR]. Though APR does not work every time (there is a 64-68% success rate), the sooner the treatment is administered, the greater the likelihood the pregnancy will continue. There is no evidence APR causes an increase in birth defects.

There are serious risks and complications associated with a woman having an induced abortion, including physical harm (e.g., uterine, or cervical damage, hem-

³ Chemical abortion is not the same as Plan B, the drug that delays ovulation.

orrhage, infection, incomplete abortion, maternal death) and mental health risks (e.g., increased risk of drug abuse, depression, anxiety, PTSD, or suicide) [Sko23b]. There is also potential risk to future pregnancies (i.e., future infertility, increased pre-term delivery). Chemical abortion is particularly dangerous, and in fact, has a four times greater risk to the woman than surgical abortion [Sko23b].

Is Abortion Ever Necessary?

There are extremely rare, challenging cases that warrant further discussion. During pregnancy, a woman carrying a child may experience a serious pregnancy complication that threatens her life. Examples may include abnormal amniotic fluid buildup (polyhydramnios), preterm labor, spontaneous rupture of membranes, gestational diabetes, or preeclampsia. A life-threatening risk to the mother requires treatment and the child may need to be separated from the mother by induction or cesarean section to try and save both lives. A necessary maternal-fetal separation may result in the unfortunate death of the child. Every current state law, even those with limits on abortion, allows an exception for a physician to intervene in a life-threatening emergency to try and save the life of the mother [Sko23a, HS23].

There are also cases of pregnancy due to tragic events of rape, incest, or sex trafficking. It's important to remember that every unborn child, even those conceived during a tragic and horrific event, is a child of God. An abortion that intentionally ends the life of the unborn child only adds more trauma and violence to the situation. Abortion can cause serious physical and mental health trauma as described above. Therefore, one must also consider whether the abortion will ease the suffering for the victim of sexual assault or cause further suffering.

Babies prenatally diagnosed with a life-limiting condition often face discrimination, and parents are pressured to abort. For certain conditions, such as spina bifida or twin-to-twin transfusion syndrome, *in utero* fetal surgery may be a treatment option to repair the defect before birth [MWL19, TSL19]. For other life-limiting conditions often (mistakenly) referred to as “lethal” or “fatal” or “incompatible with life,” abortion is typically the *only* option offered to families. The fact is, however, that life-limiting fetal conditions are a broad spectrum of maladies with care paths that include a life that may extend well beyond the initial birth period, weeks, months, years, or decades.

In the case of trisomy disorders like trisomy 13 (T13) or trisomy 18 (T18), babies

might live one, five, ten, or even 30 years, depending on the type and severity of the condition [CLL23c]. Even babies with the most severe life-limiting disorders, such as serious neural tube defects in which large portions of the brain do not form (e.g., anencephaly), are often able to have a livebirth but may have a short life.

Simply, for many life-limiting conditions, it is often impossible for anyone to know until after birth exactly what support or the extent of the support a baby will need. Therefore, each baby needs and deserves special attention and individualized medical care tailored to the child's specific condition. Care of an unborn child with a complex fetal condition should be no different than any other child. For what other condition outside the womb do we abandon the patient and not provide care, let alone kill the patient? In the same way that we lovingly care for a person outside the womb when they are diagnosed with a condition, like cancer, we ought to care for any human being that is prenatally diagnosed before birth with compassion and care.

No matter what the diagnosis is or whether a fetal anomaly exists or not, every human life has undeniable purpose and meaning regardless of abilities or how long he or she lives. The intrinsic worth of a person is not governed by their capacity to do certain things. God is the potter, and we are the clay. Who are we to question His ways? Who are we to question God and say that some lives are more important than others? As God reminded Moses, "Who gave man his mouth? Who makes him deaf or mute? Who gives him sight or makes him blind? Is it not I, the LORD?" (Ex. 4:11) Or when anointing David to be His next chosen king of Israel, He reminded Samuel that "[t]he LORD does not look at the things man looks at. Man looks at the outward appearance, but the LORD looks at the heart" (1 Sam. 16:7). God's thoughts and His ways are far greater than anything we can imagine.⁴

Conclusion

The intent of this essay is to equip believers with knowledge regarding beginning of life issues so that the church can stand firm with boldness on the truth, and then be sent out to meet the needs of those suffering and share the gospel of Christ.

Every human being is created by God, in His image, to live for His Glory. Jesus

⁴ "'For my thoughts are not your thoughts, neither are your ways my ways,' declares the LORD" (Isa. 55:8).

took on flesh and came into the world in the same way as we did—a human being growing in his mother’s womb, with the purpose of glorifying His Father in heaven by suffering death on the cross for our sin and salvation. Every child, no matter the circumstances of their conception or the stage of their existence, should be seen through the eyes of Christ with humility, wonder, awe, care, compassion, and love. When we do this, are we not loving our neighbor as ourselves as commanded by our Lord and Savior?⁵

I’d like to conclude with the following observations. The spiritual battle is very real. The devil and the dark forces of this world are wreaking havoc by creating confusion and lies, taking life, and turning people away from Christ. As Jesus warned, “The thief comes only to steal and kill and destroy” (John 10:10). In the case of abortion, the church must take a strong stand against the evil that abortion is and compassionately help women and men who are facing this battle [PG22]—equip them with truth, warn them of the risks, and most importantly, lead them to Christ.

There is often the well-intentioned desire to alleviate the pain of human suffering and focus on meeting the social needs of women and men so the abortion becomes unthinkable. But in this broken world of sin, worldly needs alone will never be satisfied. “What good will it be for a man if he gains the whole world, yet forfeits his soul?” (Matt. 16:26). The late Dr. Alan Cairns preached that the church of Christ must be careful to not make a social program its number one focus that is divorced from the task of preaching the gospel and winning souls for Christ.⁶ “Alleviation of human suffering should be the extension of the alleviation of the curse of sin” [Cai23]. Helping to meet earthly needs is good, but only Christ can change hearts and minds. Only God can cast out fear with hope and shed light in the darkness. With God, nothing is unplanned or impossible.

What is needed most for all of us, no matter what decision we face, is the true water of life and bread of heaven—the gospel of Jesus Christ. As Jesus told the woman at the well, “Everyone who drinks this water will be thirsty again, but whoever drinks the water I give him will never thirst” (John 4:13). In Christ, we have redemption and *true* life. Thanks be to God.

⁵ “Love your neighbor as yourself” (Matt. 22:39).

⁶ Sermon from the late Dr. Alan Cairns from the Free Presbyterian Church of Greenville, SC [Cai23].

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