“I’m a Girl Because That’s What Mommy Wanted!” – The Ethics of Screening for Gender Using IVF

The brave new world of the future is not so far away anymore. Fertility clinics, originally created to assist infertile couples have children, can now screen for numerous genetic traits. Are we ready for the responsibility and future ethical questions? My experience says we are woefully unprepared. In our consumer oriented society of the 21st century, we want what we want, when we want it. If a couple has the financial resources and says they are willing to take the medical risks, who can say what they can and can’t do?

In July 2015 an article appeared on Yahoo Parenting{1} about a couple in Frisco, Texas, north of Dallas. Rosa (36) and Vincent (37) Costa spent $100,000, enduring seven rounds of In Vitro Fertilization (IVF), including one miscarriage, just to ensure their third child would be a girl. Numerous fertility clinics allow infertile couples to genetically screen their embryos for nearly 400 genetic disorders. One additional benefit is that the embryos can also be screened for gender. Gender is a fairly simple assessment. Males will contain an X chromosome and a Y chromosome. Females are XX. These chromosomes are easily identified and distinguished.

This service is becoming more commonplace for couples since a round of IVF can cost around $12,000. If for an additional

$6,000, screening can focus on healthy embryos, why not? Identifying the sex of the embryos is an added bonus. But in the last few years, couples like the Costas have mushroomed. Some clinics report a rise of 250%. As one who has addressed the issue of genetic engineering for over twenty years, I have regularly discussed the possibility of choosing the sex of your next child. The primary method used by fertility clinics is to assess gender before implantation. If you desire a girl, then only female embryos are implanted. Embryos of the "wrong" sex can be discarded, frozen for later use, made available for adoption or donated to "science" for stem cell research. Most frozen embryos end up in limbo. They do not stay viable forever. Some frozen embryos have been successfully revived after 5 years in storage. But many are simply discarded. Embryos donated for stem cell research are also ultimately killed. In order to retrieve the valuable embryonic stem cells, the embryo is destroyed.

Consequently, this IVF procedure to guarantee the sex of your child ultimately results in the death of numerous perfectly healthy embryos. So you have perfectly healthy parents sacrificing healthy embryos just to get the male or female child they desire. This cost is far more consequential than the dollar amount. I'm opposed to even discarding genetically challenged embryos for healthy embryos. Now we have crossed the line to create human life in the laboratory with the full intention of sacrificing embryos of the wrong sex. In another article{2}, fertility specialist, Dr. Jeffrey Steinberg, acknowledges he has had the technology to screen for eye-color since 2009. He delayed making it available then due to an outcry from the public. Saying he has a waiting list of 70-80 people, he's getting ready to make it available again.

But despite the clear loss of innocent human life in our search for a "balanced family" or even worse, children of the preferred eye color, we run into the specter of facing up to responsibilities too few have considered. The Costas, for

instance, want a little girl. There is nothing wrong with that necessarily. But what are they really expecting? After all, they've spent $100,000 in the effort. The article mentions they will be decorating the new nursery in pink. But what if Olivia, their chosen name, ends up not liking pink? What if she's a tomboy who doesn't even like dresses? Or even more extreme, what if she decides as a little girl, she's really a boy! What do you do then? Even when selecting a child's gender, you likely have some concept in your mind of what a boy or girl will be like-otherwise, why choose gender at all?

It seems we are unwilling to ask the hard questions. Fertility experts will likely cater to what their clients want. There is competition, after all. One fertility specialist even believes that withholding these technologies puts him in the role of "playing god." He won't withhold something a client wants when the technology is available. That equates the consumer as a "god." The American Idol is not just a performer looking to win a contest to land a lucrative recording contract. The American Idol is personal choice. As I said earlier, if someone says they understand the risks, has the money and wants to pursue a medical technology, whose is going to say no? Should we say no? We have known for some time that absolute power corrupts absolutely. Do we just stand by and allow people to make choices that show an utter disregard for innocent human lives in the pursuit of personal preferences? Life becomes cheap across the board. Everyone is suddenly at risk. Where do we draw the line?

My great concern is that public demand, not reasonable ethical considerations, will guide medical decisions. Do we really not have the collective will to say there are some medical procedures or even experiments we will not do?

Notes

1. Why One Mom Spent 100K to Guarantee Baby No. 3 Is a Girl Accessed July 14 2015.

2. Couple Spends 50K to Choose Baby's Sex, Shining Light on Trend Accessed July 14, 2015.

"At What Stage of Pregnancy is a Fetus Able to Be Genetically Engineered?"

I am a high school student wondering about the process [of] genetic screening. I would like to know at what stage of pregnancy a fetus is able to be genetically engineered, or if the process must begin before a child is conceived. I would also like to know whether or not a normal gene has to be cloned from a donor in order to replace a problem gene in another. Any help would be greatly appreciated!

Just to make sure we are on the same page, *genetic engineering* and *genetic screening* are two different, but related things. *Genetic screening* involves testing a person for certain genetic diseases. This test can occur before the embryo is implanted into the womb as in the case of in vitro fertilization (IVF), it can occur during the pregnancy through a procedure call amniocentesis, and it can occur after a baby is born including into adulthood. Often with IVF, embryos are screened and the "best" ones are selected for implantation. Embryos need not just be screened for diseases, they can also be screened for gender and certain genetic markers. In some states pregnant women over 40 may be required to get genetic testing to determine if their baby has Down's syndrome since the chances of Down's syndrome increases when the mother is over 40. Most babies after they are born are tested for

certain diseases such as phenlyketouria because, if they test positive, the parents need to keep them on a strict diet. Lastly, some couples might want to be genetically screened before they decide to get married. This was practiced in a particular group of American-Jewish people who had a high incidence of Tay-Sachs disease. If both people were carriers, then they may decide not to get married because they would likely have a child that would die from Tay Sachs (they usually die at about age 5).

Genetic modification and *genetic engineering* are slightly different. *Modification* is done with plants and with some farm animals (although usually they use hormonal and breeding techniques for reasons outlined below). *Genetic engineering* in humans is still more theoretical than actual. The reason for this has to do with our lack of knowledge regarding the genome.

The theory goes like this: in the lab, we can replace segments of DNA with other segments of DNA in organisms like bacteria. So, what if we do this with human beings: replace unwanted DNA that codes for unwanted traits with DNA that codes for wanted traits. Sounds simple enough. Unfortunately—or fortunately, depending on your point of view—our genome is *not* that simple. There isn't just one strand of DNA that codes for eye color and another that codes for hair color. Our genes (genes are composed of lots of DNA) are very complex and the functions they code for are interwoven, often coding for multiple things at a time. Also, scientists are finding that DNA doesn't simply code for traits in a letter–to–letter fashion. Rather, there is apparently some interaction between two genes spatially in the genome.

As far as whether a normal gene has to be cloned from another, theoretically one can make segments of DNA in the lab. And scientists have been able to insert these segments into bacterial cells. However, replacement and insertion of a DNA segment in mammalian cells is a very different story, and has

not been successful in laboratory settings to the extent of being able to conduct genetic engineering. I suppose if you wanted to genetically engineer traits into a human being, it would have to be at an early embryonic stage when there are only 6-8 cells to deal with. But even then, it is unclear whether we could use synthesized DNA or if we must receive large segments from a donor. This is very problematic because there is still the issue of expressing (i.e., flipping the "on switch") of the DNA in the organism.

Thanks for writing. Hope this is helpful.

Heather Zeiger

"How Do We Know God's Will About Infertility?"

I have a few questions. First, does God cause everything to happen or does He just allow most things to happen? I know that He can make good results out of things that seem bad to us, but did He make the thing happen because it was what was best for us, or did it just happen as a result of free/human will? I know that God certainly CAN make things happen, but I just wonder how often He does. It seems that we thank God for the good things that happen in our life. And we should! But is it then right to "blame" Him for the bad in our life? Or maybe not so much blame, but just thank Him for the bad too because we know it's ultimately for the best? Or maybe we shouldn't thank Him or blame Him for every little thing, because maybe some things just happen. But typing that out – it just doesn't sound right.

Many things make me wonder this, but on a personal level, it's in regards to my and my husband's infertility. Did God cause this to happen because we must learn something from it, or did it just happen because we live in a fallen world where things like disease, infertility, and bad things as a result of sin and our free will are just going to happen?

Also, in regards to our infertility problem, how do we know what God's will is for us? We have been trying for 2 years now. We've had advanced and expensive treatments that have failed. Sometimes people tell us to "just trust God." But what do they mean, that we should stop pursuing treatments and just let it happen naturally? I mean, we have medical diagnosis that need treating… one would do the same for a cold, or flu, or cancer right? They would seek help. I feel the same way about infertility. Do you have an opinion on that? Now, maybe by saying "Just trust God," they mean not to worry so much. And that I can understand. I know that God has a plan and that it will be perfect for us. So I do need to not worry so much. It's just a very emotional issue!

But as far as knowing God's will…. I mean, I just wish I knew if His will for us was to never be parents, or to adopt, or to keep trying for a biological child. We pray for guidance, but it's hard to tell if we're "hearing" God or just doing what we want to do. If I ask God to "speak" to me, will He always? How will I know it is God rather than just myself telling myself, "it's a sign?" Does that makes sense?

Oh, and I don't know what your thoughts are on fertility treatments. We have done in vitro fertilization but we do not believe in destroying any embryos. We also only put in as many as we'd be willing to carry and froze the rest to use in another cycle. We would never do selective reduction or kill an embryo. So I hope if you have time to reply, that you don't automatically say that we should stop fertility treatments because they are immoral… unless you think they are for another reason that I have not mentioned and that you might

enlighten me with.

Thanks for your trust in us to help you think through these important issues.

> *I have a few questions. First, does God cause everything to happen or does He just allow most things to happen?*

Ultimately, I think it's really a matter of semantics because of the biblical teaching that God is sovereign. Bottom line is, nothing happens to us without His permission, so whether He proactively caused it to happen or He allowed it to happen, it still has His fingerprints all over it and He has a purpose in it before it ever reaches us to begin with.

> *I know that He can make good results out of things that seem bad to us, but did He make the thing happen because it was what was best for us, or did it just happen as a result of free/human will? I know that God certainly CAN make things happen, but I just wonder how often He does.*

"Just happening" sounds a lot like "accident" or "coincidence." And in a universe where God is sovereign, there are no accidents. Nothing "just happens" apart from His permission. God is big enough to use both things He directly sends to us, as well as indirectly such as through people's choices, to accomplish His purposes. The "how often" part is a shrouded mystery that He doesn't let us in on. There's no way to know that, only to speculate.

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Absolutely! And that's why God calls us to always give thanks for everything (Eph. 3:20). From our very limited perspective, we don't always know the difference between the good things that happen in our lives, and the bad things. The biggest example of that is the horror and pain the disciples experienced when Jesus died, which devastated them because they thought it was a bad thing, but it was the very best thing that ever happened-until right around the corner, an even better "best thing" happened, when Jesus was raised from the dead. When we give thanks for what feels like a bad thing, we are relinquishing it into God's hand and affirming our trust in His goodness and His sovereignty. (By the way, this is one of the major lessons God has taught in my Christian walk. I invite you to read my story, which I call "How to Handle the Things You Hate But Can't Change" here: www.probe.org/how-to-handle-the-things-you-hate-but-cant-change/)

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Unfortunately, God often doesn't let us know the "why" of our trials. But when you consider that He calls us to honor him in the midst of our suffering (1 Peter 2), then the reason behind them doesn't matter as much as our response to them.

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> *cold, or flu, or cancer right? They would seek help. I feel the same way about infertility. Do you have an opinion on that? Now, maybe by saying "Just trust God," they mean not to worry so much. And that I can understand. I know that God has a plan and that it will be perfect for us. So I do need to not worry so much. It's just a very emotional issue!*

Yes, I think that God's command to Adam and Eve to exercise dominion over the earth was the overarching principle that resulted in modern science. So, if there's something that can correct infertility, it makes sense to do what we can (and what we can afford, while still remaining good stewards of the money God has put in our hands). Of course this is an emotional issue for you. . . it's much more than just a command to "be fruitful and multiply," it's also the desire of your heart which God put there as an element of your femininity and your husband's masculinity!

> *But as far as knowing God's will…. I mean, I just wish I knew if His will for us was to never be parents, or to adopt, or to keep trying for a biological child. We pray for guidance, but it's hard to tell if we're "hearing" God or just doing what we want to do. If I ask God to "speak" to me, will He always? How will I know it is God rather than just myself telling myself, "it's a sign?" Does that makes sense?*

Boy, it's hard when we're trying to discern God's leading, isn't it?

Here's one way to look at it: God will not open a door that violates His will for you. Which is how fertility clinics can put all the right chemicals in a Petri dish, add eggs and sperm. . . . and the stuff just sits there and no baby is made. Only God can create life. (And yes, we can theoretically force a clone, but we can't control whether or not a healthy baby makes it to full-term delivery.) Which is why you have to go with the biblical principles, which are to be fruitful and

multiply. If you try in vitro and God doesn't bless it, He is speaking His will to you. You can try to adopt and if God doesn't allow an adoption to go through, He is speaking His will to you.

I think the best route is to commit your desire for children to the Lord, ask Him to guide you, and then move forward, trusting Him to take care of the details. If you have submitted yourselves to the Lord about this issue, then you can rest in Him and in His love for you that He will be faithful to lead you. (My guess is, that describes how you've been living already. . .??)

I do think that often, God leads us through His peace (consider Col. 3:15, "Let the peace of Christ rule [act as umpire] in your heart. . .") or the lack of it. I often counsel people, "Go to where the peace is." After praying much about it, you probably don't have any peace about the idea of never being parents, for example, which would constitute direction to continue to seek His ways of getting His children into your family, whether by adoption or biology.

> *Oh, and I don't know what your thoughts are on fertility treatments. We have done in vitro fertilization but we do not believe in destroying any embryos. We also only put in as many as we'd be willing to carry and froze the rest to use in another cycle. We would never do selective reduction or kill an embryo. So I hope if you have time to reply, that you don't automatically say that we should stop fertility treatments because they are immoral… unless you think they are for another reason that I have not mentioned and that you might enlighten me with.*

Nope, we don't think they're immoral; we think that using the criteria you specified, that is the God-honoring and life-honoring way to do it.

I hope this helps. I don't have a crystal ball to tell you

what you should do, but I CAN encourage you to daily give thanks for your fertility problems, give thanks for your desire for a baby, give thanks that God is in control, give thanks for His faithfulness in guiding you in the process, and give thanks by faith for the baby He has for you, however He chooses to do it.

(And by the way, we experienced secondary infertility after our first baby died, so I have prayed these prayers myself. We have two sons.)

Blessings to you!

Sue Bohlin
Probe Ministries

"What Do You Think About Surrogate Mothering?"

My wife is considering acting as a surrogate mother for a friend who is having difficult with in vitro fertilization. Her embryos won't implant. Both of us couples are Christians. My wife and I have 3 kids and although she doesn't want another child for us she is willing to carry one for her friend. What are your thoughts about entering into this relationship?

First, I consider surrogate parenting a very risky venture. Just because your wife is able to intellectually say she will give up the baby to your friends when the time comes, does not mean she will be able to do so emotionally. Carrying a baby for nine months creates a powerful bond that is not easily

broken. This is easily seen in teenage mothers who often change their minds about giving their baby up for adoption after birth. The surrogate mom can rationally say and believe "this baby is not mine," but her emotions find it difficult to believe this after carrying the child for nine months.

Since there is also a relationship among friends here the risk is even greater, because even just a hint of wavering as the time of birth approaches could be interpreted as betrayal. The mother acting as the surrogate would also be faced with seeing this child regularly and having the pain of separation renewed frequently.

Second, there is the sacrifice of the family of the surrogate mother. Her husband and children will need to endure the difficulties of a pregnant mom and wife for a child that is not theirs. How is this explained to her children particularly? Pregnancy always involves risk and this is asking a lot of the family. All parties would need to seek God's peace before proceeding. If anyone is hesitant, I would not proceed.

Third, I am troubled by the implications of surrogacy to the concept of a couple becoming one flesh through marriage and child-bearing. I would want to be sure of the Lord's leading in this regard because I just have a suspicion that surrogacy may violate this principle by having someone outside the marriage carry a baby from another union.

While I do not see a clear and unambiguous reason to say no, that is my advice due to the number of potential problems and pitfalls. We sometimes have to face difficult decisions with couples dealing with infertility because we seem to say we are unsympathetic to their dilemma. But we must also be realistic to realize that God does not promise that all potential solutions to all our problems are Biblical. Having a child of our own is not promised or demanded. Often a family's unwillingness to adopt is not just rooted in the natural

desire to have children but in a selfishness that only wants “our” child.

If it were me, I would not do it.

Respectfully,

Ray Bohlin
Probe Ministries

“What Does the Bible Say About Donating Eggs for In Vitro Fertilization?”

A friend is considering giving some of her eggs to another woman to have a baby. Is this a moral issue? What does the Bible say about such a thing?

There is indeed a moral concern with donated gametes. Though some have expressed concern as to whether this can be constituted as adultery, I believe this term is best left for the physical act itself.

The relevant biblical passages are first Genesis 2:24, which introduces the concept of “one flesh.” Many scholars describe children as an expression of a couple becoming one flesh. Even if this specific connection is not accepted, it is clear that a third flesh has been introduced into the marriage relationship with donated gametes, either eggs or sperm. In my mind this is the most pressing moral issue.

A second related passage is Genesis 16 and the story of Hagar and Ishmael. In a sense, Sarai "borrows" Hagar's eggs to give Abram an heir when she has failed to do so herself. Though God respects and saves Hagar and Ishmael, the union is not blessed by God and Abram's promised heir is still to come through Sarai later. Also note the emotional trauma this arrangement causes Sarai, Hagar and Abraham. The emotional issues cannot be overlooked. The egg donor will understandably feel a special kinship with the resulting child; after all, she is the genetic mother. This could easily put a strain on the marriage in which the child is raised that can be difficult to anticipate.

I would not counsel the acceptance or donation of either sperm or egg.

A helpful resource on these questions is a series of booklets put out by the Center for Bioethics and Human Dignity called the *BioBasic Series.* They have three additional booklets covering suicide, end of life issues, and alternative medicine. Each is offered in a question and answer format. You can purchase them through the Center at www.cbhd.org. I am co-authoring a booklet in the next round of four on genetic engineering. I hope the next four will be released within 2002.

Respectfully,

Ray Bohlin
Probe Ministries

The Little Lamb That Made a Monkey of Us All

Like many others, I was caught totally flat-footed, astonished by the announcement of the successful cloning of an adult sheep, Dolly. Caught so unaware, in fact, that Probe is re-airing my three-year-old program on human cloning the week of March 17-21, 1997, because so little had changed. When the announcement of a successful sheep cloning was made, it was too late to pull the program from the schedule; tapes had already been sent to all the radio stations and there just wasn't time to replace it in only three weeks. Consequently (and spurred by a number of phone calls and e-mails from around the country), I have compiled a few thoughts and comments regarding scientific and moral considerations about this historic breakthrough to temporarily plug the gap.

Scientific Considerations

Normal mammary cells were intentionally starved of critical growth nutrients in order to allow the cells to reach a dormant stage of the normal cell cycle. This process of bringing the cells into dormancy apparently allows the cell's DNA to be reprogrammed by the proteins already in the egg cell for renewed cell division and new cell functions. The cells were fused with an enucleated egg cell (a cell that had its nucleus removed) and stimulated to begin cell division by an electric pulse.

The process was inefficient. Out of 277 cell fusions, 29 began growing *in vitro.* All 29 were implanted in receptive ewes, 13 became pregnant, and only one lamb was born as a result. This is a success rate of only 3.4%. In nature, somewhere between 33 and 50% of all fertilized eggs develop fully into newborns.

The procedure was very non-technical, and no one is really

sure why it worked. It needs to be repeated. All attempts to clone mouse cells from adults have failed. Some suggest that sheep embryos do not employ the DNA in the nucleus until after 3-4 cell divisions. This may give the egg cell sufficient time to reprogram the DNA from mammary cell functions to egg cell functions. Human and mouse cells employ the nuclear DNA after the second cell division. Human and mouse cells may not be capable of being cloned because of this difference.

The purpose of these experiments was to find a more effective way to reproduce genetically engineered sheep for the production of pharmaceuticals. A sheep embryo can be engineered to produce a certain human protein or hormone in its milk. The human protein can then be harvested from the milk and sold on the market. Instead of trusting the somewhat unpredictable and time-consuming methods of normal animal husbandry to reproduce this genetic hybrid, cloning it assures that the engineered gene product will not be lost.

Genetic material is the same in all cells of an organism (except the reproductive cells, sperm and egg, which have only half the full complement), but differentiated cells are biochemically programmed to perform limited functions, and all other functions are turned off. Based on attempts in frogs and mice, most scientists felt that the reprogramming was impossible.

A critical question is the lifespan of Dolly. All cells have a built-in senescence or death after so many cell divisions. Dolly began from a cell that was already six years old. A normal lifespan for a ewe is around 11 years. Will Dolly live to see her seventh birthday?

It is also uncertain as to whether Dolly will be reproductively fertile. Frog clones are usually sterile.

Reprogramming the nucleus could lead to procedures to stimulate degenerating nerve cells to be replaced by newly

growing nerve cells. Adults do not generate nerve cells normally.

Moral Considerations

Will humans be cloned for spare parts? While this is certainly possible, I consider it very unlikely that this would be sanctioned by any government. That doesn't mean, however, that someone won't try.

Will humans be cloned to replace a dying infant or child? This is certainly a possibility, but we need to ask if this is an appropriate way to deal with loss. Might unrealistic expectations be placed on a clone that would not be placed on a normally-produced child?

Will humans be cloned to produce children for otherwise childless couples? This is the most often-given reason for human cloning. This argument is unpersuasive when there are currently so many children that need adoption. Also, this further devalues children to the level of a commodity. If *in vitro* fertilization is expensive, cloning will be worse.

Will humans be cloned for vanity? Someone will certainly try.

Will human clones have a soul? In my mind, they will be no different from an identical twin or a baby that results from *in vitro* fertilization. How a single fertilized egg splits in two to become two individuals is a similar mystery.

Does cloning threaten genetic diversity? Excessive cloning may indeed deplete the genetic diversity of an animal population, leaving the population susceptible to disease and other disasters. But most biologists are aware of these problems, and I would not expect this to be a major concern unless cloning were the only means available to continue a species.

If the technique is perfected in animals first, will this save the tragic loss of fetal life that resulted from the early

human experimentation with *in vitro* fertilization? *In vitro* fertilization was perfected in humans before it was known how effective a procedure it would be. This resulted in many wasted human beings in the embryonic stages. The success rate is still only 1 in 5 to 1 in 10; normal fertilization and implantation success rates are 2-3 times that. While animal models will help, there will be unique aspects to human development that can only be known and overcome by direct human experimentation which disrespects the sanctity of human life.

This provides a means for lesbians to have a child. One supplies the nucleus and the other provides the egg. The egg does contain some unique genetic material in the mitochondria that are not contributed by sperm or nucleus. One cell from each donor would be fused together to create a new individual, though all the nuclear genetic material comes from one cell. Sue Bohlin has an upcoming program on homosexual myths including gay marriage. This is no longer marriage as it is currently understood, and the technological hoops that must be jumped through for any gay couple to have children should be a clear warning that something is wrong with the whole arrangement.

Are human clones unique individuals? Even identical twins manage to forge their own identity. The same would be true of clones. In fact, this may argue strongly against the usefulness of cloning since you can never reproduce all the life experiences that have molded a particular personality. The genes will be the same, but the environment and the spirit will not.

All together, I find the prospect of animal cloning potentially useful. But I wonder if the procedure is as perfectible as some hope, and may end up being an inefficient process to achieve the desired result. Human cloning is fraught with too many possible difficulties, from the waste of human fetal life during research and development to the

commercializing of human babies (see my previous cloning article) with far too little potential advantage to individuals and society. What there is to learn about embryonic development through cloning experiments can be learned through animal experimentation. The cloning of adult human beings is an unnecessary and unethical practice that should be strongly discouraged if not banned altogether.