

# Politics in Your DNA

How the realities of biology complicate the “personhood movement.”

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Twins in the womb

Photo illustration by Juliana Jiménez Jaramillo. Image courtesy U.S. National Library of Medicine/National Institutes of Health.

What if at the very beginning stages of development you absorbed your twin’s cells? You’d be twins—a phenomenon called a chimera. Would you suddenly feel extra special because you are really more than just one person? Threatened and confused about your identity? These are not just hypothetical questions. Some people are chimeras. Probably not many, but certainly a lot more than we know about since most never realize it. Chimerism happens even when we don’t see it.

There’s another kind of genetic mosaic, too, one in which your body is made up of cells from different organisms, usually from different people (occasionally from other animals). This might happen if you have a transfusion or a transplantation, for example, or when mothers absorb some cells from their

offspring, or twins absorb cells from each other. Technically, every female is a kind of mosaic of two different X-chromosomes.

News of chimerism and genetic mosaicism is not completely new, nor are the ethical and practical questions associated with them. Yet as a society, we often take a heads-in-the-sand approach to addressing what such developmental complexities mean. Bioethical and policy discussions have instead largely focused on responses to laboratory creations of cross-species combinations that lead to chimeras, hybrids, or genetics mosaics. But they miss the fact that people and politicians care deeply about what it means to them to be human and how we can protect “life.” The personhood movement, and proposed legislation discussed below, show the urgent need to understand what we are really talking about. As the political season for congressional and local campaigns heats up, some candidates will surely make promises or proposals about embryos and reproduction that do not fit the facts. Last campaign season we got claims about “legitimate rape” and whether rape can lead to pregnancy, for example, and we heard Paul Ryan’s claims about personhood. The personhood movement is not going away soon and remains active through [personhoodusa.com](http://personhoodusa.com), for example. Now is the time to get ready for whatever comes up this round.

Most people didn’t care deeply in the 1960s when Beatrice Mintz combined embryos from two different mice to create a chimera, nor in the 1980s, when Nicole Le Douarin combined chick and quail embryos. The result was taken as intriguing and a little science fictionlike, and it generated discussion of what it would mean if somebody could create human or human-animal chimeras. In the mid-1990s, researchers did just that and provoked public interest. What if researchers introduced human nerve cells into a mouse? (Stanford law professor Hank Greely liked to phrase the question in a different way: What if Mickey Mouse suddenly started talking?)

Debates about this kind of laboratory combination led to legal and regulatory responses in some countries, such as the U.K., which had also led the way in regulating embryo research and in vitro fertilization. The United States didn’t enact any new policies, though bioethics consultants in the U.S. report that people often feel queasy about creating “unnatural” laboratory human chimeras, for a mix of practical and ethical reasons.

But it’s different when the chimera occurs naturally. Does a chimeric person combined from two fertilized eggs get two votes? According to some proposed legislation, he or she should. The discussion matters. As candidates position themselves for the dash to the next congressional and then presidential election, let’s understand what is at issue here.

Rep. Paul Ryan of Wisconsin—the failed Republican vice presidential candidate in 2012—was one of many to co-sponsor the House Sanctity of Human Life Act of 2013. (He was a co-sponsor on earlier, similar legislation as well.) The summary of [H.R. 23](#):

Declares that: (1) the right to life guaranteed by the Constitution is vested in each human and is the person’s paramount and most fundamental right; (2) each human life begins with fertilization, cloning, or its functional equivalent, at which time every human has all legal and constitutional attributes and privileges of personhood; and (3) Congress, each state, the District of Columbia, and all U.S. territories have the authority to protect all human lives.” The proposed bill asserts further that “(B) the life of each human being begins with fertilization, cloning, or its functional equivalent, irrespective of sex, health, function or disability, defect, stage of biological development, or condition of dependency, at which time every human being shall have all the legal and constitutional attributes and privileges of personhood.

The impulse is clear. The sponsors, including Ryan, want to protect what they see as human life. They want to prohibit abortions. Unfortunately, they may love life, but they do not understand its

earliest developmental stages. Their proposed legislation and the personhood movement ignore the existence of chimeras, among other developmental phenomena.

We know that some cases exist in which two eggs are fertilized inside a woman quite naturally, and the genetically different cells divide but then touch each other and grow together. In some cases, one absorbs the other; this can lead to an individual with a partially formed fetus, or parasitic twin, inside or attached to him or her.

In still other cases, the two develop largely separately, but result in births of what were historically called Siamese or conjoined twins. Medical responses in developed countries usually call for separating the two, even when this means that one will die to allow the other to live, especially when the two share vital organs.

In perhaps the biologically most intriguing cases, the two combine more completely. Two different lines of cells, with different genes on different chromosomes, come together and, with the amazing regulatory powers of life, merge together to make a whole, apparently normal and natural chimeric person. The case of Karen Keegan brought chimerism to medical attention in 1998, when her sons were being tested as possible kidney donors for her. They failed to match her DNA in ways that suggested that they could not be her sons, yet she (and her family) knew they were. Doctors finally discovered that she had two distinct sets of DNA, which proved that chimerism does occur and yet remain invisible.

Another case—this one in 2002—involved Lydia Fairchild, who similarly failed to match her children genetically. This biological surprise led to court battles as Fairchild separated from her husband and sought child support. She also turned out to be a genetic chimera. The resulting 2006 British documentary *The Twin Inside Me* (or *I Am My Own Twin*) called into question using genetic testing as a reliable source of evidence about identity. Chimerism also challenges us to think more seriously about how we will handle “personalized” medicine for people who are actually complex mixes of genomic materials.

What does such developmental complexity mean for the proposed Sanctity of Human Life Act? If one twin absorbs part of the other, did it commit homicide? Perhaps so. Conjoined twins are considered to be two different people legally, but what if one of them has only legs and feet that stick out from the fully formed twin (which has actually happened)—is the one twin is a person with some extra parts, or did he or she also commit homicide in some way? What about a chimeric person—does he or she get two votes because of having come from two different fertilizations? If fertilization defines personhood, then surely so.

Clearly, this easily leads to nonsense. The Sanctity of Human Life Act legislation will almost certainly never become law, in part because the U.S. Congress is not doing much in these deeply divided times, and in part because members of Congress often propose such dead-end legislation to satisfy their core constituents and gain political and financial support. We know that. Nonetheless, the message is clear. For the 40 members of Congress who co-sponsored this bill, sanctity of human life is one of the top issues for gaining that political and financial support that they need so desperately. It helped place Paul Ryan as the conservative force on the Republican presidential ticket in 2012. Biological facts may not matter much to those constituents. But they should matter to otherwise intelligent people, which includes Paul Ryan and colleagues.

We can hope that our legislative, judicial, and executive governmental branches will learn enough biology so that they do not even consider legislation that makes little sense. Understanding what embryos are and how they develop is not just a theoretical matter—being inaccurate has

consequences. Knowing the biology will not tell us how to act or what is right and good, but it will inform decisions so that they are not inconsistent with biological reality.

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