This biological reality supports what we have described as "early cellular development along the continuum of natural potentiality that can result in the formation of a fetus" (Magill and Neaves 2009, p. 30), and it presents a significant challenge to the natural potentiality argument.

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Gerard Magill, Ph.D.
Vernon F. Gallagher Chair for the Integration of Science, Theology, Philosophy, and Law, and Professor, Center for Healthcare Ethics
Duquesne University
Pittsburgh, PA.

William B. Neaves
President and CEO
Stowers Institute for Medical Research
and Professor of Basic Medical Science
University of Missouri at Kansas City School of Medicine
Kansas City, MO

Comments on "Moral Complicity in Induced Pluripotent Stem Cell Research"

In his article titled "Moral Complicity in Induced Pluripotent Stem Cell Research," Mark T. Brown (2009) unfortunately mischaracterizes my ethical analysis of the use of induced pluripotent stem (iPS) cells for replacement therapies, or treatments (Byrnes 2008). In my paper, which Brown cites, I argue that, just as it is ethically acceptable for parents to allow their children and themselves to be immunized using vaccines produced by cell lines derived from human fetuses aborted in the past, it is also acceptable for persons in the future to benefit from treatments that use iPS cells validated using human embryonic stem (ES) cell lines

derived in the past. The assumption I make is that iPS cells would have to be shown to be functionally equivalent to human ES cells—i.e., validated—before they could be used for cell replacement treatments. (If it turns out that this assumption is incorrect, and primate or even mouse ES cells can be used for the validation, then all residual ethical problems will disappear and there will be no ethical problems whatsoever associated with iPS cells.) I wrote:

> . . . [I]n both cases, the origin of the treatment is in a one-time event: either the one-time use of aborted fetuses to obtain cell lines (e.g., MRC-5 and WI-38) to grow weakened virus strains for vaccine production, or the one-time destruction of human embryos to validate iPS cells, which then effectively replace embryonic stem cells. In the latter case, *if no additional embryonic stem cell lines are derived*, then derivation of the existing lines could be considered a "one-time" event in the past, albeit an event that extended over a several-year period (Byrnes 2008, p. 287, emphasis added).

Note the phrase "if no additional embryonic stem cell lines are derived." The derivation of ES cell lines inherently involves destruction of embryos; indeed, that is why many people, including me, are opposed to human ES cell research. In my article, I am arguing that, if no additional ES cell lines are derived, then no additional human embryos will be destroyed, and the destruction of human embryos will lie in the past. In this case, embryo destruction could be considered a past event, just as the abortion of a human fetus from which vaccine-producing cell lines were derived is a past, albeit tragic, event.

In the process of building his argument that proponents of iPS cell research are morally complicit in embryo destruction, Brown (2009, p. 15) casts me as being in favor of the "derivation of new embryonic stem [cell lines]." This is the exact opposite of my position. In fact, I am opposed to further destruction of human embryos. I believe that the hundreds of ES cell lines already in existence are more than sufficient to validate iPS cells and so *no additional lines need to be derived*. This means that no additional human embryos will need to be destroyed.

Apparently based on the misperception that I support future destruction of human embryos, Brown concludes that "Byrnes's endorsement of ongoing iPSC validation studies would seem to implicate him and those who follow his lead in formal and material complicity in what they perceive as moral evil" (p. 16). He writes that "explicit formal complicity would attach because he [Byrnes] knowingly and intentionally recommends that embryos be killed in order to facilitate a transition to a future in which no more embryos need be destroyed" (p. 16). Additionally, my "followers" and I would be guilty of "proximate material complicity" as well as "remote material complicity" (p. 16). Unfortunately, this broad condemnation is based on a misconception of my actual position.

An additional problem involves Brown's use of a quotation he attributes to me:

> Once embryonic stem cells are used to successfully validate iPS cells, they will no longer be needed and their association with iPS cells will lie *in the past*. Is there not an element of sadness and resignation in accepting something (iPS cells) associated with an unjust act (destruction of an embryo) even if this act was committed *in the past*? And yet, should not our response to past injustices be to vow not to allow them to occur in the future? Is not such an approach more constructive than focusing *upon the past*? (Byrnes 2008, pp. 288–89, emphasis added)

In my original paper, the first sentence appears in one paragraph, the second appears two paragraphs later, and the third and fourth appear two sentences after that. At the very least, ellipsis dots ought to appear between the three sets of sentences. Beyond this, however, the juxtaposition of the first and second sentences gives their combination a meaning that neither sentence had on its own in the original context.

Both sentences contain the phrase "in the past." The first sentence refers to the use of ES cells to validate iPS cells. Since validation of iPS cells is occurring as we speak and is taking place very rapidly, it should be complete in the next few years. Very soon, then, the process of validation, in all likelihood, will be complete and will lie in the past. The second sentence refers to a set of events—destruction of human embryos—that has *already* occurred, and therefore *now* lies in the past. In this second sentence, I am not saying that we should feel free to destroy additional human embryos to derive additional ES cell lines and that, in the future, the destruction of these embryos will lie in the past. I am saying that, as of today—*right now*—the embryo destruction lies in the past. I am not advocating the destruction of additional embryos. Such a position, indeed, would make me morally complicit in human embryo destruction. It also would be internally inconsistent. Brown's juxtaposition of these two sentences, however, gives the reader the unfortunate impression that I favor future embryo destruction when, in fact, I do not.

When one removes the perceived endorsement of future embryo destruction, Brown's argument that I am morally complicit in embryo destruction collapses. Ironically, later in his paper (p. 18), Brown favorably writes that "Byrnes . . . considers the possibility that enough human embryonic stem cell lines already exist worldwide to conduct the comparative studies needed to develop iPSC based cell replacement treatments and other biomedical applications of stem cell science." He states that "this is . . . well worth investigating." On this last point, Brown and I can agree. Indeed, I would go further, and argue that we do, in fact, already have enough cell lines. No more are needed, and we can successfully validate iPS cells with the ones we already have.

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W. Malcolm Byrnes, Ph.D.
Associate Professor
Department of Biochemistry and Molecular Biology
Howard University College of Medicine
Washington, DC

On reading Mark T. Brown's article, "Moral Complicity in Induced Pluripotent Stem Cell Research" (2009), one might think, by the way in which he has phrased his argument, that I am an opponent of childhood vaccination. This would be a mistake. Brown cites an article in which I justify the use of vaccines grown in cell lines that have a distant connection with abortion, but in which I also contend that some who have especially serious reservations about this connection may choose to make a "heroic" refusal, thus putting their own lives, and potentially others' lives, at risk (Furton 2003). He then proceeds to discuss a view about children that I do not hold.

I hold that parents should *not* refuse to immunize their children, first because one cannot act heroically as someone else's proxy—there is no merit in that—and second, in this particular case, because parents are obliged to act in the best interests of their children. Almost all modern-day vaccinations are given during childhood and epidemic diseases disproportionately affect the young. So Brown's general conclusion in this section, which immediately follows a quote from my own work, that those who take the "heroic" path may "put at risk the lives and health of the children of [other] people" is seriously misleading. I do not favor parental refusals to immunize children and have spoken against this practice for many years (see, e.g., Furton 1999; 2004; 2005). My position is that parents ought to vaccinate their children with these products, despite their distant connection with abortion. This has proven a controversial view for some who share my faith, but it has recently been confirmed by the Vatican in its 2009 Instruction *Dignitas Personae*, at note 35.

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Edward J. Furton, M.A., Ph.D.
Ethicist
The National Catholic Bioethics Center
Philadelphia, PA

Response to Byrnes and Furton

In "Moral Complicity in Induced Pluripotent Stem Cell Research" (MCIPS) (Brown 2009), I sketched the moral complicity implications of alternative national stem cell policies with respect to direct reprogramming techniques that appear to result in pluripotent stem cells derived from skin cells, hair cells, and possibly other somatic cells. This aspect of the stem cell debate was considered from the perspective of those who are pro embryo life and who attribute to human embryos a complete set of basic human rights, including a stringent right to life; and from the perspective of advocates of embryonic stem cell research who do not recognize full moral equivalence between human embryos and human children and who do not ascribe to human embryos an inviolable right to life. The moral complicity concerns of embryonic stem cell research advocates focus upon the scope of medical beneficence with respect to patients whose quality of life and personal autonomy are negatively impacted by the interval between the time when they might have gotten effective medical treatment through unimpeded stem cell science and the time at which stem cell science constrained by pro embryo life moral complicity concerns arrives at a similar destination. The moral complicity concerns of embryo life proponents focus upon noncooperation in past and future destruction of human embryos in order to derive *in vitro* embryonic stem cell lines.

Among the policy alternatives considered were proposals that would be responsive to the possibility that induced pluripotent stem cells (iPSC) at some point may provide a source of stem cell lines that would substitute for human embryonic stem