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interimplus@theinterim.com

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A new calendar year also brings a new semester to most schools. This particular supplement is devoted to updating on developments regarding stem cell research. There are continuous pressures on governments to relax regulations and to direct public money to the embryonic research sector. What has been achieved in this research field?

Scholarship Candidates

Outstanding! Ambitious! Full of ideals! There are many superlatives to describe the 100 entrants to the Father Ted Colleton Scholarship program. The candidates are from all across Canada, east to west. They are from a variety of school systems and also from the ranks of the home-schooled. The reference letters and self-profiles reveal young people who not only care deeply about serious issues, but who are acting upon their beliefs in their schools, communities, clubs and churches. They are leaders in their communities now, and they hold tremendous promise for the future. In the next edition of *The Interim Plus* we shall present a sampling of their thoughtful writings.

The selections will be instructive and will demonstrate a high level of writing, thinking, understanding and degree of commitment of many young people. They are a credit to their communities. They know what is at stake in the great struggle of our day.

Fr. Ted Colleton surrounded by previous winners of the scholarship that bears his name

Stem Cell Research

During the recent American congressional elections the issue of stem cell research played an important role in several senatorial campaigns, including that of Missouri where public figures entered the fray. In Canada, the issue is resurfacing as the federal authorities announced the composition of the panel of experts and ethicists who are to help regulate the work and operations of Assisted Human Reproduction Canada (AHRC).

The topic has been covered several times in past editions of *The Interim Plus*. (see September, 2001, February, 2003 and November, 2003). For a thorough review of ongoing developments in this field teachers and students would do well to access the material on LifeSite.News.

(Just type in 'embryonic stem cell research' and you will access dozens of articles and related links,
http://www.google.com/search?q=embryonic%20stem%20cell+site:www.lifesite.net&l=en)

The controversy regarding stem cell research has not abated in any way. Despite the overwhelming lack of any real progress in the use of embryonic stem cells, certain groups with deep pockets continue to insist on the need for public funding of such research.

In the January, 2007 edition of *First Things*, (a very reputable and erudite monthly dealing with issues of religion in the public square) Maureen L. Condic wrote an excellent paper on the state of stem cell research today. She provides a perspective taking into account the initial hopes and promise of embryonic stem cell research and the actual reality. Since hundreds of millions of dollars have been spent on ESCR over the past five years and more than 900 research papers have been published since 2002, Condic felt it important to revisit the promise in light of current findings. It is highly recommended that the article (What We Know About Embryonic Stem Cells, Maureen L. Condic) be read in its entirety. It is available online at
http://www.firstthings.com/article.php3?id_article=5420

Questions

Based on the Condic article from *First Things*:

1. Review the material on stem cells:
   a) What are stem cells? (An animated explanation is provided at http://www.dnalc.org/stemcells.html)
   b) Where are they found?
   c) How are they extracted?
   d) Why were the embryonic variety "preferred" by many scientists?
   e) What profound ethical and medical concerns accompanied the use of embryonic stem cells?

2. How have researchers tried to address the problem of tumour formation?
3. How did cloning relate to the problem of immune rejection?
4. What scandal did Hwang Woo-Suk of South Korea create with his fraudulent claims?
5. "Extensive evidence indicates that even the cloned animals that make it to birth are not untarnished success stories." Given this reality is human cloning really a viable possibility? Is the applicability of "therapeutic cloning" supported by the scientific evidence thus far?
6. Can embryonic stem cell safety be guaranteed against their converting to malignant cancer cells?
7. Condic reminds us that there is essentially no scientific evidence supporting the assertion that embryonic stem cells in the laboratory can be induced to form all the cells comprising the mature human body. Why is it repeated nonetheless?
8. Condic concludes that scientists in the field of embryonic stem cell are guilty of hubris. On what does she base her conclusion?
9. In light of developments in the field is the promise of obtaining medical miracles from embryonic stem cells a fairy tale?

Document 1

"Many have wondered at the insistence on funding for and pursuit of embryonic stem cell research given the fact that there is not even one embryonic stem cell therapy currently in use while adult stem cell therapies are used every day in the treatment of nearly a hundred different diseases."

Dr. David C. Reardon, a biomedical ethicist said in an interview that the key to understanding the dilemma is the scientists' quest for a 'superhuman' race and the goal of creating a race of sub-humans to do menial or dangerous tasks. While embryonic stem cell researchers prefer to talk about the goal of ending disease, their ultimate goal is eugenic in nature, to create "better people." Dr. Reardon draws his conclusion based on a startling series of quotes from leading scientists.

James Watson, who won the Nobel Prize in 1962 for describing DNA structures, has proclaimed stupidity a disease and wants the freedom to design "better people" who lack the hypothetical "stupidity" gene. In a 2003 televised interview Watson, now president of the Cold Spring Harbour Laboratory, New York said, "If you are really stupid, I would call that a disease …so I'd like to get rid of that …

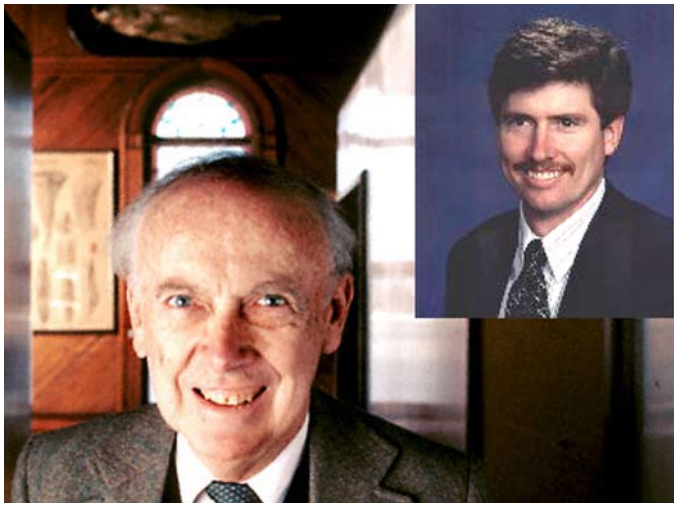
Dr. Joseph Fletcher a Harvard Professor widely recognized as the "patriarch of bioethics", said, "Chimeras [human-animal crossbreeds] might legitimately be fashioned to do dangerous or demeaning jobs. As it is now, low-grade work is shoved off on moronic and retarded individuals, the victims of uncontrolled reproduction. Should we not program such workers 'thoughtfully' instead of accidentally, by means of hybridization?"

May 9, 2006 (LifeSiteNews.com)

(For more salient quotes and links to organizations devoted to 'transhumanism' or moving forward human evolution through genetic manipulation see Dr. Reardon's website: **http://www.elliotinstitute.org)**

Questions

1. What dangers does Dr. Reardon warn about?
2. Are the quoted statements from these renowned scientists discomfiting? In what way?
3. Are the concerns expressed by Dr. Reardon exaggerated?



David C. Reardon, Ph.D. (inset above right), director of the Elliot Institute claims the ultimate goal of stem cell research is eugenic in nature, to create "better people." Scientists like James Watson, (above, Noble prize winner for his research into DNA), wants this freedom.

Document 2

Adult Stem Cell Research: True Potential Sacrificed for Other Possibilities Says Biotech Writer

Peter J. Smith

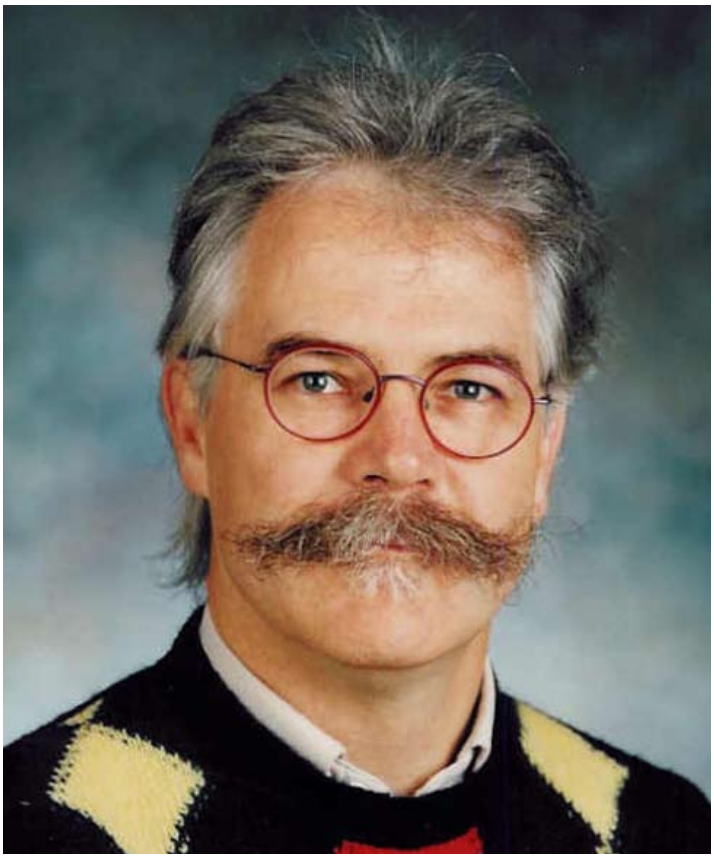
http://www.lifesite.net/ldn/2006/jun/06061311.html

The use of embryonic stem cells has a host of problems since they are not compatible with adult tissues, says James Kelly, the Biotech writer of *The Seoul Times.* The dangers run the gamut of immune rejection to the formation of life-threatening tumors; this last concern is not surprising since embryonic stem cells are designed to further the rapid growth of a human embryo. In order for embryonic stem cells to really have the potential of adult stem cells, argues Kelly, they need to be matured to fetal stages.

Adult stem cells, on the other hand, have been shown to have actual practical results that surpass what capability embryonic stem cells may have. In clinical trials, Kelly

says that adult stem cells have consistently outperformed embryonic stem cells, which tend to be "genetically unstable and function abnormally." Kelly quotes Australia's Prof. Alan Mackay-Sim, who says that adult stem cells from an individual's nose, "appear to have the same ability as embryonic stem cells in giving rise to many different cell types."

Kelly blames the misinformation on powerful researchers and industries that are intent on pursuing embryonic stem cell research and human cloning techniques. Professor James Sherley, an associate professor in biological engineering at MI, said in an interview with MercatorNet that "Many scientists who do not support human embryo research are afraid to speak out because of possible reprisals from powerful scientists who can affect grant success, publication acceptances, tenure promotion, and employment."



Professor Alan Mackay-Sim, Deputy Director of Griffith's Eskitis Institute for Cell and Molecular Therapies. Last year Professor Mackay-Sim and his team showed that adult stem cells from the olfactory mucosa, the organ of smell in the nose, could be grown in the laboratory into many different types of cells, including heart, muscle, liver, kidney and blood cells.

Questions

1. What are some of the problems associated with embryonic stem cells?
2. Why are some scientists who do not support ESCR afraid to speak out on the issue?

Document 3

Together with researchers from Stanford University, stem cell researchers at the University of Minnesota's Stem Cell Institute have succeeded in replacing the immune system and bone marrow cells in mice using adult stem cells, reports Medicalnewstoday.com.

The researchers in this particular study used multipotent adult progenitor cells (MAPCs) which can be extracted from bone marrow tissue and differentiated into specific cellular groups that have the unique capability to develop into other cell types including neural, muscle and bone tissue.

This recent breakthrough in adult stem cell research is especially significant because scientists have been, up until now, unsuccessful in finding a way to reproduce hemotopoietic stem cells, or cells that produce the blood system. These cells are formed in the bone marrow.

Dr. Catherine Verfaillie is the director of the Stem Cell Institute and co-author of the recent study. She first identified MAPCs in 2001 and, despite skepticism from many researchers in the same field, the ability to identify and reproduce MAPCs has continued to progress.

In this particular study, Verfaillie and her associates extracted MAPCs from mice, reproduced the cells in the lab and then transplanted them into other mice that were lacking an immune system due to radiation treatment. Verfaillie commented on the successful outcome of their study saying, "The cells not only survived when transplanted but completely repopulated the blood system of the mice."

The MAPCs did not reproduce into foreign tissue or produce tumors in any of the study subjects as embryonic stem cells have been known to do in other studies.

January 17, 2007 (LifeSiteNews.com)

Dr. Catherine Verfaillie, a University of Minnesota scientist, has tried to find a replacement for embryonic stem cells. (AP File Photo)

Questions

1. What progress has come from the work of Dr. Catherine Verfaillie?
2. Why does the mainstream press not report or give major attention to these types of breakthroughs?

Document 4

"Supreme Scientist" Superstar

Colleen Carroll Campbell
National Review (December 2, 2005)

Before confessing last week to ethical lapses in his research, South Korean stem-cell pioneer Dr. Hwang Woo Suk had enjoyed god-like status in his native land. …

Hwang's confession may have cost him his job, but it did not appear to squelch his superstar standing. According to news reports, South Koreans have demonstrated their support for him in Internet polls, held a candlelight vigil in his honor, denounced the television network that helped expose his misdeeds, and even offered their eggs for his research. As one would-be donor explained to the BBC, "I think that Dr. Hwang is the brightest star of Korea in the 21st century and an innovative figure who could save the human race. His research is already well advanced and must continue whatever the cost."

… Many embryonic-stem-cell-research activists also discount concerns about the demand for eggs leading to ethical breaches and the exploitation of women. Scientists can be trusted to comply with agreed-upon professional and government standards, they say. Yet when the world's leading stem-cell researcher admits that the frenetic pursuit of promised cures made the temptation to cheat too great, they dismiss his behavior as irrelevant to the debate about his research. … … the ethical problems created by embryonic-stem-cell research: the immense demand for human eggs that threatens to transform desperately poor women into reluctant egg donors; the risks to those women of illness, infertility, and death that may go unmentioned by researchers seeking their eggs; and the dire consequences for a culture that makes a commodity of human eggs, human embryos, and human life itself.

A South Korean panel dealt a devastating blow to discredited scientist Hwang Woo-suk, concluding that his once-celebrated team provided no data to prove a claim they had produced tailored embryonic stem cells.

Supporters of embryonic-stem-cell research say that we must destroy life to prolong life, that concern for the welfare of those walking among us demands that we disregard the lives of those waiting to be born. One need not be a religious fanatic to see that there is something deeply disturbing about the might-makes-right logic behind embryonic-stem-cell research, and about societies that regard that logic as dogma and its scientific defenders as demigods.

http://www.catholiceducation.org/articles/medical_ethics/me0087.html

Questions

1. How does this episode in ESCR research raise deep ethical concerns?
2. What is the might-makes-right logic behind embryonic-stem-cell research?

Document 5

A positive stem cell option lies in use of amniotic fluid

Paul Tuns, Editor, *The Interim*.

Researchers at the Institute of Regenerative Medicine at Wake Forest University in Salem, N.C. have discovered a type of cell that floats freely in the amniotic fluid of pregnant women and has many of the traits of embryonic stem cells, suggesting a potentially ethical source of pluripotent cells – cells that scientists believe can grow into any other human cell and thus regenerate tissue such as brain or muscle and potentially treat degenerative diseases including Alzheimer's, heart disease and stroke.

Dr. Anthony Atala, the lead researcher, says amniotic fluid-derived cells "show great pluripotentiality." The cells are "shed" by the unborn child during pregnancy and were found to be easier to maintain in laboratory dishes than embryonic stem cells, making them both preferable as a source of stem cells and ethical, because harvesting them does not require the destruction of the human embryo.

Medically speaking, they initially appear superior to ESCs because thus far, they have not developed cancerous tumours. In recent months, there have been numerous reports that stem cells derived from embryos have developed into cancerous tumours. But the stem cells collected by Atala's team did not age and after two years living in the lab, still did not display any tumour development.

The *Washington Post* reported that when taken from amniotic fluid, they could most easily be applied to treat babies with birth defects because the cells would effectively be the baby's own, reducing the risk of rejection. But researchers – including Dr. Atala – were quick to dismiss the

idea that cells harvested from amniotic fluid would replace the need for embryonic stem cells. And U.S. Congressional Democrats voted to fund embryonic stem cell research the day after the study was released in the journal Nature Biotechnology.

The *Washington Post* reported that the discovery added "credence to an emerging consensus among experts that the popular distinction between embryonic and 'adult' stem cells – isolated from bone marrow and other organs – is artificial." That is, adult or somatic stem cells have the same properties as ESCs for treatment.

The only serious ethical complaint concerns one specific method of gathering the fluid. Currently, amniotic fluid is retrieved during routine prenatal testing that utilizes amniocentesis. The procedure, which requires puncturing the uterus with a needle to collect the fluid (usually to test for genetic anomalies), has a one in 200 chance of resulting in miscarriage. Pro-lifers oppose such tests because of the risk to the life of the unborn baby, as well as the usual course of action when such tests determine that a child has a genetic abnormality such as Down syndrome. Approximately 80 per cent of the time, such diagnoses end in abortion.

But amniotic fluid can also be collected when a mother's water breaks – and from the placenta that is expelled after birth, which is also a rich source of stem cells.

If researchers limited themselves to retrieving cells ethically at the time of birth, and not during pregnancy, amniotic fluid would provide an ethical and promising source of stem cells.

Anthony Atala, MD, director of Tissue Engineering for the Urology Program at Children's Hospital Boston, and his research team are creating new organs in the laboratory using patients' own cells. "Potentially, in the distant future, tissue engineering will allow patients in need of an organ transplant to receive one with little delay and better chances for acceptance," says Atala.

Questions

1. How is amniotic fluid a possible good source of stem cells?
2. Periodically, actors or other public figures who suffer from a particular disease act as spokespersons for campaigns to get more public funding for embryonic stem cell research. Are they above criticism for their stance?
3. If embryonic stem cells were proved to be effective sources for cures of various maladies would they be acceptable ethically?

Document 6

Ottawa names reprotech panel

And critics go ballistic over presence of 'social conservatives'

Paul Tuns, *The Interim*. February, 2007, p.2

On Dec. 21, federal Health Minister Tony Clement named the board for Assisted Human Reproduction Canada, an oversight agency established by the federal government to regulate reproductive and experimental technologies, such as in-vitro fertilization and stem cell research. This was done when it passed the *Assisted Human Reproduction Act* in 2004. Immediately, proponents of embryonic stem cell research and their media allies criticized the appointments to the eight-member board, complaining that there were no stem cell researchers or fertility patients or patients who theoretically might benefit from ESCR.

The *Globe and Mail* ran four stories and editorials critical of the appointments in the two weeks following the announcement. The paper editorialized on Dec. 29 that the board was "light on scientific expertise" and may pursue a political agenda, because it supposedly had a number of "social conservatives." The paper claimed four of the eight board members were socons.

Edward Hughes, head of the Canadian Fertility and Andrology Society, also complained about the makeup of the board, saying he was disappointed fertility specialists and their patients were not represented. Tim Caulfield, director of the Health Law Institute at the University of Alberta, concurred. "Other than a few names, these are not people who have had a lot to do with stem cell research or stem cell policy in Canada."

Obviously, however, such people would have a conflict of interest serving on a board overseeing activities with which they are intimately involved, either as medical professionals or patients. The same could be said of scientists and potential patients of embryonic stem cell research.

In fact, the government appointed a diverse board, with representation from across the country, and from various cultural groups and professional backgrounds.

Elinor Wilson was appointed the full-time president of AHRC, while former Progressive Conservative Nova Scotia premier John Hamm was named the board's chairman.

Wilson has held numerous management positions in both non-government and government organizations, including, most recently, the post of chief executive officer of the Canadian Public Health Association. Before entering politics, Hamm was a family physician for 30 years.

The board is composed of a wide variety of experts from academic, legal, medical and faith-based professions.

Among the board members are Suzanne Rozell Scorsone, a member of the Royal Commission on New Reproductive Technologies in the early 1990s and director of search and senior communications consultant for the Catholic Archdiocese of Toronto; David Novak, a professor of Jewish studies at the University of Toronto; Francoise Baylis, a bioethics specialist in the Faculty of Medicine at Dalhousie University; Albert Cudley, a medical doctor and director of the Genetics and Metabolism Program at the Winnipeg Regional Health Authority; Theresa Kennedy, vice president of corporate communications for the B.C. biotech firm Res Verlogix; Roger Bilodeau, an Ottawa lawyer and former New Brunswick deputy minister of justice; Barbara Slater, a public health specialist with the public health unit in Kingston and former program manager at the Bay Centre for Birth Control in Toronto; and Dr. Joseph Ayoub, an oncologist at Hopital Notre-Dame and a professor at McGill University.

The federal agency, created by legislation enacted three years ago and established on paper in January 2006, will regulate the assisted reproduction industry through renewing, suspending and revoking licences for fertility clinics and ruling on research proposals, including those that request permission to use embryonic stem cells and create clonal human beings. The agency will also advise the federal minister on all matters related to assisted human reproduction, such as sperm donation and payment for surrogate mothers.

Questions

1. Why would the appointment of the board members to Assisted Human Reproduction Canada be of significance?
2. Why was its composition controversial in the view of some people? What was the basis of their criticism?
3. Compare the *Globe and Mail*'s editorial of December 29, 2006 to *The Interim* article on the appointment of the panel members.

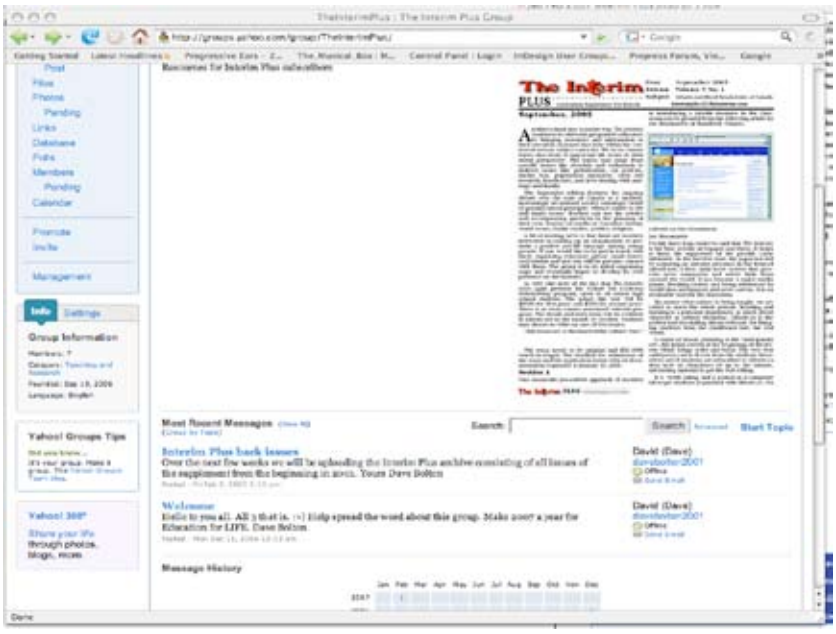
Yahoo Forum for Teachers

Lastly, we bring to teachers' attention the formation of a yahoo group to serve as a forum for pro-life educators to exchange ideas, views, and communicate their thoughts and teaching strategies on key life issues of the day. You are encouraged to join the group and make your own contributions. This is one simple way to expand the culture of life.

The address is:
http://groups.yahoo.com/group/TheInterimPlus/

Please tell friends and colleagues about this new link for communicating with like minded educators. There is so much to be done and so few to do it, especially when the few do not realize how numerous they actually are because they are not in contact with one another. Nominate friends and fellow teachers. Send this call out to them.

Also, if you have a resource to share we will gladly post it for others to access.



How to join The Interim Plus via the group page:

1. Locate the group (http://groups.yahoo.com/group/TheInterimPlus/).
2. Click on the Join This Group button on front (home) page, as seen above.
3. If you are not signed in, you will be asked to enter your Yahoo! ID. If you do not have a Yahoo! ID, you can register by clicking on the Sign Up link.
4. Set your membership preferences. When you join, you can choose a profile you would like to display to the group, select the email address at which you would like to receive group messages, choose how you receive group messages, and more.