

Testimony Supporting Senate Bill number 515:
AN ACT RELATIVE TO STEM CELL RESEARCH

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I am very glad for having come to speak so late in the day for I have been able to hear the words of so many brave people and I am grateful for it. Honorable members of the Legislature of the Commonwealth of Massachusetts, thank you so much for this opportunity to testify on the issue of stem cell research. My name is Willy Lensch and I am a post-doctoral fellow in George Daley's laboratory at the Whitehead Institute for Biomedical Research. I am here today to tell you why I believe stem cell research is important to the Commonwealth and to urge you to support Senate Bill 515.

I have enjoyed a lifelong interest in biology, beginning on a small farm in rural Utah. As a graduate research fellow at Oregon Health Sciences University, I studied the genetics of leukemia in two populations, children affected with a horrible disease called Fanconi anemia and older adults that were suffering from leukemia resulting from cancer treatment. I was deeply affected by my experience working with cancer patients and their families and I witnessed firsthand the indelible imprint their suffering leaves on those that love and survive them. My own father was lost to blood cancer when I was still a boy.

These experiences deepened my commitment to develop more effective and less debilitating therapies for blood diseases and set in motion a chain of events that led me to the Commonwealth to pursue stem cell research with George Daley.

The goal of my work is to investigate the very beginnings of blood development using human embryonic stem cells, which brings me to the question that has been asked several times today, most vocally by Representative Pedone, namely, "Why embryonic stem cells?" Bone marrow

transplantation can be a very effective treatment that helps many people using adult stem cells for therapy. However, current estimates indicate that between 70 and 80% of patients waiting for this therapy, are unable to receive it due to the simple fact that they have no donor. If we could simply increase the number of people listed in donor databases, I would not be here working on blood development using embryonic stem cells. Unfortunately, this shortfall remains. I study embryonic stem cells, because blood cells are made in nature from cells like embryonic stem cells. Speaking to the question as to whether or not blood can be made from embryonic stem cells and standing before you as a former embryo myself, I began as a single fertilized egg but now contain all of the myriad differentiated cell types in the adult body including neurons, insulin producing islet cells, and blood cells. They all came from a single cell, like an embryonic stem cell and we in the laboratory are urgently trying to understand how that process occurs so that we can create cells for therapeutic use. This is not a competition between adult and embryonic stem cells but rather two fields working together to cure disease. In fact, if we look at the federal spending on the issue, we see that the NIH currently funds over 300 million dollars worth of adult stem cell research to but 15 million for embryonic stem cells. This disparity reflects how new the field of embryonic stem cell research is. Understanding this biology promises to put us closer to better treatments for blood cancers, to develop cells for bone marrow transplantation, and to engineer systems for tissue regeneration. We do not seek to do this work instead of adult stem cell work, but rather together with it as each cell type will likely be more effective in certain diseases than others. There are adult stem cell types such as those that form the dopaminergic neurons that decay in Parkinson's disease, that simply do not seem to be capable, at this point, of being found in the adult body. These neurons develop in the embryo and it makes sense to see if they can be produced in the laboratory from embryonic stem cells. I

am incredibly hopeful about the potential this research holds to address human disease. I also believe that this work can be conducted in a manner that is careful, thoughtful, and respectful of the origins of human embryonic stem cells.

I have chosen to continue my work with embryonic stem cells because I feel this research is both honorable and necessary. However, I am at a crossroad in my career as a research scientist. The post-doctoral fellowship is typically the point when a scientist decides where and how they will settle into their professional life. Legislative debate about the future of stem cell research has created a climate of uncertainty in my work as well as the work of others in my laboratory, many of whom are here today. To realize the full promise of stem cell research, the Commonwealth urgently needs a legislative commitment that creates a supportive environment though I will continue despite the fact that the field is profoundly inhibited by a variety of barriers.

These barriers include the very limited numbers of stem cell lines currently approved for use, the availability of these lines as the majority are held privately or outside of the United States, the restriction against using public funding to study new stem cell lines, and the threat to completely outlaw the creation of therapeutic stem cell lines for tissue regeneration in patients. With the passage of Senate Bill 515 the Commonwealth of Massachusetts can send a strong message to not only scientists by affirming our state's support of this vital research area but our national lawmakers as well. This bill is important for not only those of us working in the field, but also to those who stand to benefit most from the creation of new therapies, namely the patients and their families.

I'd also like to take one moment to comment on earlier testimony stating that some 80 million women would be subjugated by the effort to produce new stem cell lines. That is a speculative number. In my opinion an astonishingly speculative number. It is perhaps rather fortuitous that my testimony has come after 2:00, as I am now able to comment on an article that was embargoed by the journal Science until 2:00 p.m. today. In this article, the authors demonstrate the first step in being able to form oocytes from previously created embryonic stem cells. This represents an important first step in trying to create new stem cell lines without the difficulties of oocyte donation, a procedure that is in no way a trivial task. It is I would stress, a first step.

I have testified today because I sincerely believe this research holds great promise to substantially improve medical practice. For this reason, I am committed to remaining in the field despite its uncertain future. I was raised to tell the truth and I do not believe in writing checks when the money is not yet in the bank, so I cannot tell you for certain when or even if therapies will come from this work. I can say that I believe they will and I have put my scientific credibility on the line for this as well as my entire future. What I can tell you for certain is that they never will if we do not try. As a citizen of the Commonwealth from East Cambridge, as a scientist, and as a person who has lost loved ones to cancer, I respectfully urge you to support Senate Bill 515. Thank you.