

## WHY EMBRYONIC STEM CELLS LACK THE ABILITY TO REPAIR MATURE TISSUES

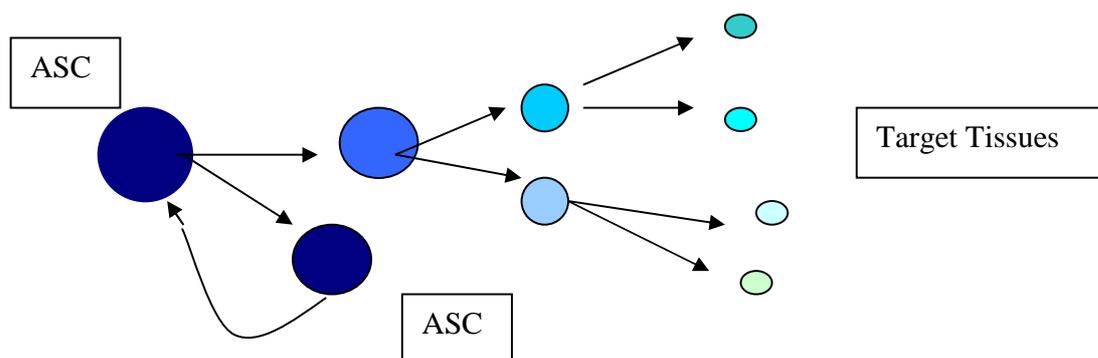
Professor James L. Sherley is a biologist who does research on adult stem cells at Massachusetts Institute of Technology. He has spoken at several recent events for Mass. Citizens for Life, and is unambiguous in his support for the protection of embryonic human life – and his opposition to embryonic stem cell research.

On the occasion of his receiving the Ignatius O'Connor Award, he amazed and empowered the audience of pro-lifers by going beyond the moral and ethical objections to embryonic stem cell research by declaring an objection from the point of view of science itself – embryonic stem cells do not have the ability to repair damaged or diseased mature tissues. He stated, "...scientists have specifically promised that this research (embryonic stem cell) will yield new therapies for injuries and disease...this promise can never be met." He then went on to explain why.

### The limitation of embryonic stem cells

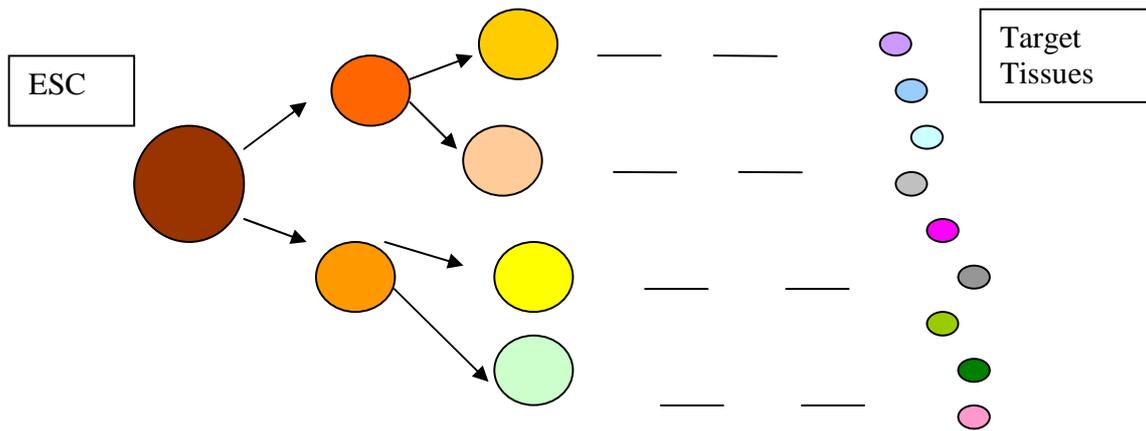
The tissues of our bodies are made of cells that are continually performing their functions, and then dying. Our tissues are maintained by the functioning of adult stem cells which divide and replace the old cells. They are able to do this continually throughout our lifetime because of a property called "asymmetric self-renewal" – a property not found in embryonic stem cells.

"Asymmetric self-renewal" means that when an adult stem cell divides, one of the new cells retains the properties of the original cell, capable of generating new cells for the mature tissue repeatedly. The second new cell then goes through a process of continued division and specialization until it generates the target tissue, such as a red blood cell.



The original **adult stem cell** divides. One new cell remains in the original state as an adult stem cell. The other new cell continues to divide and become further specialized into the terminally specialized cells. – no further specialization will happen. The adult stem cell can continue to generate new cells over a lifetime in mature tissues.

Embryonic stem cells do not have the property of “asymmetric self-renewal”. When they divide, they continually become more specialized into various cells, but lose the capacity to begin the generation process continually over a lifetime.



**Embryonic stem cells** do not have the property of asymmetric self-renewal and can only continue to divide and specialize into various tissues. Therefore, they will not have the ability to repair diseased and injured mature tissues.

Professor Sherley then went on to say that embryonic stem cells cannot even be used to generate adult stem cells. According to Dr. Sherley, “...the methods used to derive embryonic stem cells introduce defects that would compromise the function of adult stem cells derived from them.”

## Conclusions

In explaining these processes, Dr. Sherley has provided us with an additional powerful tool to present to the American public the reasons why funding should be provided only for adult stem cell research, rather than embryonic. As he concluded, “Although one wishes that the moral argument were sufficient, the scientific argument, once fully disclosed, will remove the conflict that leads so many to abandon our moral principles for valuing all human life.”