

reports in 2002 that in some circumstances such cells can fuse. Fusion might give a false appearance of metadifferentiation, the argument ran, therefore adult stem cells are not really multipotent, and are a nonstarter as an alternative to embryonic stem cells.

Fortunately, for the now highly expectant patient, reports of the death of adult stem cells were greatly exaggerated. Much research (some indeed antedating the fusion excitement) clearly shows that although fusion can and does occur in certain tissues, adult (say) bone-marrow-derived stem cells can also generate multiple lineages without cell fusion. Interestingly, fusion may be an unexpected mechanism of achieving repair, and could additionally offer means of delivering gene therapy. Normal (bone-marrow-derived) donor nuclei were found in the muscle of a patient with Duchenne muscular dystrophy, over a decade after bone-marrow transplantation for immune deficiency, offering proof of principle for fusion of bone-marrow-derived stem cells as gene therapy, and presenting tantalising therapeutic prospects. Also, it is now clear that aneuploidy represents a not uncommon, spontaneous, and normal process, rather than necessarily carrying sinister implications, as speculated.

Suggestions of low rates of differentiation of bone-marrow-derived stem cells and integration in situ, and of questionable differentiation, have also been addressed. Perhaps the most compelling (and extraordinary) evidence unambiguously confirming the ability of adult bone-marrow-derived stem cells not only to metadifferentiate but also to integrate fully into adult (human) organs, and survive for decades, comes from postmortem studies of sex-mismatched recipients of bone-marrow transplants, showing donor-derived fully differentiated neuronal cells of a highly complex morphology apparently fully functionally established within the host brain, with no evidence of fusion.

We now know that bone marrow-derived stem-cells circulate systemically and actively migrate into damaged tissue to contribute to spontaneous repair. Experimentally, therapeutic benefit occurs in numerous disease models but, importantly, repair by bone-marrow-derived stem cells does not stop at the laboratory door. Safety data from 50 years of clinical bone-marrow transplantation, during which nonhaemopoietic stem cells have inadvertently also been transplanted, and the accompanying clinical expertise in collecting, handling, freeze-storing, thawing, and delivering marrow, have safely allowed a rapid translation of bone-marrow-stem-cell science from laboratory to clinic. Controlled trials have shown significant benefit of marrow-derived stem-cell therapy in myocardial infarction, and trials are planned or underway in chronic cardiac failure, stroke, and other diseases: reports of successful adult stem-cell therapy in myocardial infarction, and trials are planned or underway in chronic cardiac failure, stroke, and other diseases: reports of successful adult stem-cell therapy in patients with corneal disease have just appeared. The next few years, not decades, will show whether adult stem-cell treatments are to join the mainstream therapeutic arsenal.

EXHIBIT 3

BENEFITS OF STEM CELLS TO HUMAN PATIENTS—ADULT STEM CELLS V. EMBRYONIC STEM CELLS (PUBLISHED TREATMENTS IN HUMAN PATIENTS)

ADULT STEM CELLS: 65—ESCR:0

Cancers

1. Brain Cancer
2. Retinoblastoma
3. Ovarian Cancer
4. Skin Cancer: Merkel Cell Carcinoma

5. Testicular Cancer
 6. Tumors abdominal organs Lymphoma
 7. Non-Hodgkin's Lymphoma
 8. Hodgkin's Lymphoma
 9. Acute Lymphoblastic Leukemia
 10. Acute Myelogenous Leukemia
 11. Chronic Myelogenous Leukemia
 12. Juvenile Myelomonocytic Leukemia
 13. Cancer of the lymph nodes:
- Angioimmunoblastic Lymphadenopathy
14. Multiple Myeloma
 15. Myelodysplasia
 16. Breast Cancer
 17. Neuroblastoma
 18. Renal Cell Carcinoma
 19. Various Solid Tumors
 20. Soft Tissue Sarcoma
 21. Waldenström's macroglobulinemia
 22. Hemophagocytic lymphohistiocytosis
 23. POEMS syndrome

Auto-Immune Diseases

24. Multiple Sclerosis
25. Crohn's Disease
26. Scleromyxedema
27. Scleroderma
28. Rheumatoid Arthritis
29. Juvenile Arthritis
30. Systemic Lupus
31. Polychondritis
32. Sjogren's Syndrome
33. Behcet's Disease
34. Myasthenia
35. Autoimmune Cytopenia
36. Systemic vasculitis
37. Alopecia universalis

Cardiovascular

38. Heart damage

Ocular

39. Corneal regeneration

Immunodeficiencies

40. X-Linked hyper immunoglobulin-M Syndrome
41. Severe Combined Immunodeficiency Syndrome
42. X-linked lymphoproliferative syndrome

Neural Degenerative Diseases/Injuries

43. Parkinson's disease
44. Spinal cord injury
45. Stroke damage

Anemias/Blood Conditions

46. Sickle cell anemia
47. Sideroblastic anemia
48. Aplastic Anemia
49. Megakaryocytic Thrombocytopenia
50. Chronic Epstein-Barr Infection
51. Fanconi's Anemia
52. Diamond Blackfan Anemia
53. Thalassemia Major
54. Red cell aplasia
55. Primary Amyloidosis

Wounds/Injuries

56. Limb gangrene
57. Surface wound healing
58. Jawbone replacement
59. Skull bone repair

Other Metabolic Disorders

60. Osteogenesis imperfecta
61. Sandhoff disease
62. Hurler's syndrome
63. Krabbe Leukodystrophy
64. Osteopetrosis
65. Cerebral X-linked adrenoleukodystrophy.

The PRESIDING OFFICER. The Senator's time has expired.

CONCLUSION OF MORNING BUSINESS

The PRESIDING OFFICER. Morning business is closed.

PROTECTION OF LAWFUL COMMERCE IN ARMS ACT

The PRESIDING OFFICER. Under the previous order, the Senate will re-

sume consideration of S. 397, which the clerk will report.

The legislative clerk read as follows:

A bill (S. 397) to prohibit civil liability actions from being brought or continued against manufacturers, distributors, dealers, or importers of firearms or ammunition for damages, injunctive or other relief resulting from the misuse of their products by others.

Pending:

Frist (for Craig) amendment No. 1605, to amend the exceptions.

Frist amendment No. 1606 (to amendment No. 1605), to make clear that the bill does not apply to actions commenced by the Attorney General to enforce the Gun Control Act and National Firearms Act.

Reed (for Kohl) amendment No. 1626, to amend chapter 44 of title 18, United States Code, to require the provision of a child safety lock in connection with the transfer of a handgun.

The PRESIDING OFFICER. The Senator from Idaho.

AMENDMENT NO. 1626

Mr. CRAIG. Mr. President, we are back on this very important piece of legislation, S. 397, the Protection of Lawful Commerce in Arms Act.

Under a unanimous consent agreement entered into last evening, we are on the Kohl trigger lock amendment. I understand there is an hour equally divided, and we hope we can get to a vote on this before 12:30. This is an important amendment, which I am confident Senator KOHL will be here in a few moments to discuss.

In the short term, let me visit the broader issue of the bill itself. We now have 62 cosponsors. I am pleased Senator CONRAD has joined us in support of this important piece of legislation to limit predatory and junk lawsuits from attempting to destroy the capability of the private sector to produce legal, effective firearms for our Nation's citizens and for our police and military. Unlike most nations, we are a nation that does not have a government company or a government manufacturer of firearms. It has always been the responsibility of the private sector. They have done extremely well. Innovation and creativity has always allowed the latest and best firearm capability, not only for our private citizens but for the military and police departments and the armed services that contract with these private sector companies to produce not only the firearms but the effective ammunition for them.

Some years ago, we saw a frustration growing in the gun control community that the public and the Congress collectively would not bend to their wishes. The public, in its inevitable wisdom, recognized that guns were not an issue in deaths caused by guns or in the commission of crimes, but the criminal element was the issue and that we ought to get at the business of law enforcement and taking those off the streets who used a gun in the commission of a crime. That is exactly what this administration has done in the last 5½ years. The use of a firearm or criminal activities in which a firearm is used has rapidly dropped in the last