

Muscle-derived stem/progenitor cell dysfunction limits healthspan and lifespan in a murine progeria model

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Nature Communications 3, Article number: 608 doi:10.1038/ncomms1611

Received 26 July 2011 Accepted 24 November 2011 Published 03 January 2012

With ageing, there is a loss of adult stem cell function. However, there is no direct evidence that this has a causal role in ageing-related decline. We tested this using muscle-derived stem/progenitor cells (MDSPCs) in a murine progeria model. Here we show that MDSPCs from old and progeroid mice are defective in proliferation and multilineage differentiation. **Intraperitoneal** administration of MDSPCs, isolated from young wild-type mice, to progeroid mice **confer significant lifespan and healthspan extension**. The transplanted MDSPCs improve degenerative changes and vascularization in tissues where donor cells are not detected, suggesting that their therapeutic effect may be mediated by secreted factor(s). Indeed, young wild-type-MDSPCs rescue proliferation and differentiation defects of aged MDSPCs when co-cultured. These results establish that adult stem/progenitor cell dysfunction contributes to ageing-related degeneration and suggests a therapeutic potential of post-natal stem cells to extend health.