Research points to ways to improve the therapeutic potential of stem cells

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Stem cells hold great promise for transforming medical care related to a diverse range of conditions, but the cells often lose some of their therapeutic potential when scientists try to grow and expand them in the laboratory. A new study, however, provides insights on the cellular mechanisms that might be targeted to help certain stem cells—called human mesenchymal stem cells (hMSCs)—maintain properties needed to make them clinically useful.

"We found that mitochondria communicate changes in cellular organization to initiate a specific metabolic reconfiguration that supports primitive hMSC properties," said Dr. Teng Ma, senior author of the *STEM CELLS* study. These findings highlight the central role of mitochondria and metabolism in the maintenance of stem cell properties in hMSC culture."

"It is imperative to better understand the biology of hMSCs, to best expand them and use them in future therapeutic applications," noted Dr. Jan Nolta, Editor in Chief of *STEM CELLS*. "Dr. Teng Ma's group has made significant strides in defining the mechanisms that keep these cells primitive. This is a compelling report that could change the way hMSCs are cultured for some applications."

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