Following osteogenic induction, short term cell and nuclear morphological profiles of MSCs from multiple donors (at multiple passages) correlated with long term mineralization.

This imaging approach could be used to compare characteristics of MSC lots from different laboratories and potentially identify morphological signatures that effectively predict their performance in an osteogenesis bioassay.

The methodology could help to significantly improve the ability of scientists to predict which MSCs are suitable for clinical use. Thus, it has the potential to support FDA regulatory efforts to ensure that therapies based on MSCs are safe and effective.