Title:	Characterization of stem-like cells produced after treatment of mouse fibroblast cells with cell-free chromatin particles isolated from human serum.
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Abstract:	Reprogramming somatic cells into pluripotent stem cells has revolutionized our understanding of cellular plasticity and holds immense promise for regenerative medicine. Traditional reprogramming methods typically involve the use of viral vectors, such as lentiviruses, to deliver a specific set of transcription factors (Oct4, Sox2, Klf4, c-Myc, Nanog) or microRNAs (miR302/367) into the target cells. However, these methods raise safety concerns due to the risk of insertional mutagenesis, where the viral vector randomly integrates its genetic material into the host cell genome. This study presents a novel approach for reprogramming somatic cells without using viral vectors. We have demonstrated that cell-free chromatin particles (cfChPs) isolated from the sera of healthy volunteers and cancer patients can horizontally transfer into NIH3T3 mouse fibroblast cells and impart stemness. These reprogrammed cells exhibit characteristics similar to those generated by traditional methods, including upregulated stem cell transcription factors and spheroid formation. Additionally, they exhibit pluripotency in vivo, as evidenced by teratoma formation in SCID mice with markers of both mesoderm and ectoderm layers. This research paves the way for a potentially safer and more readily available method for cell reprogramming, opening new avenues for regenerative medicine and stem cell-based therapies.
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