



Clinical Imaging in Regenerative Medicine

McGowan Institute for Regenerative Medicine affiliated faculty member [Michel Modo, PhD](#), Associate Professor, Departments of Radiology and Bioengineering and the Center for the Neural Basis of Cognition, University of Pittsburgh, and his colleagues have published in *Nature Biotechnology* an extensive review of “clinical imaging in regenerative medicine.” The review affirms that in regenerative medicine clinical imaging is indispensable for characterizing damaged tissue and for measuring the safety and efficacy of therapy. However, the ability to track the fate and function of transplanted cells with current technologies is limited.



Exogenous contrast labels such as nanoparticles give a strong signal in the short term but are unreliable long term. Genetically encoded labels are good both short and long term in animals, but in the human setting they raise regulatory issues related to the safety of genomic integration and potential immunogenicity of reporter proteins. Imaging studies in brain, heart, and islets share a common set of challenges, including developing novel labeling approaches to improve detection thresholds and early delineation of toxicity and function.

Key areas for future research include addressing safety concerns associated with genetic labels and developing methods to follow cell survival, differentiation, and integration with host tissue. Imaging may bridge the gap between cell therapies and health outcomes by elucidating mechanisms of action through longitudinal monitoring.

Read more...

[Abstract](#) (Clinical imaging in regenerative medicine. Anna V. Naumova, Michel Modo, Anna Moore, Charles E. Murry, and Joseph A. Frank. *Nature Biotechnology*; published online 05 August 2014.)

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