

A global assessment of stem cell engineering.

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Public Summary:

This is a report of a comprehensive worldwide investigation of stem cell engineering projects. The authors had site visits to labs throughout Europe and Asia. The authors conclude that while there is evidence of progress, there needs to be an increased role for engineers and the engineering approach.

Scientific Abstract:

Over the last 2 years a global assessment of stem cell engineering (SCE) was conducted with the sponsorship of the National Science Foundation, the National Cancer Institute at the National Institutes of Health, and the National Institute of Standards and Technology. The purpose was to gather information on the worldwide status and trends in SCE, that is, the involvement of engineers and engineering approaches in the stem cell field, both in basic research and in the translation of research into clinical applications and commercial products. The study was facilitated and managed by the World Technology Evaluation Center. The process involved site visits in both Asia and Europe, and it also included several different workshops. From this assessment, the panel concluded that there needs to be an increased role for engineers and the engineering approach. This will provide a foundation for the generation of new markets and future economic growth. To do this will require an increased investment in engineering, applied research, and commercialization as it relates to stem cell research and technology. It also will require programs that support interdisciplinary teams, new innovative mechanisms for academic-industry partnerships, and unique translational models. In addition, the global community would benefit from forming strategic partnerships between countries that can leverage existing and emerging strengths in different institutions. To implement such partnerships will require multinational grant programs with appropriate review mechanisms.

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