Whither nanomedicine in Europe? A sneak preview

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Nanomedicine has been regarded as the big hope for a range of long-standing health challenges. Millions of lives will be at stake if urgent improvements in fighting the bigger killers—mainly cancer, cardiovascular diseases and respiratory diseases—are not made soon. The needs vary from upper- to low-income countries, but nanomedicine is already making a difference in terms of preventing and treating these ailments. In addition, smart nanomedical devices bear an enormous potential in dealing with chronic conditions.

FIGURE/TABLE

Caption:

Many nanomedicine products rely on the use of nanomaterials. In Europe, the regulatory framework for nanomedicine may be 'unofficially' bound to the release of the Recommendation 2011/696/EU on using nanomaterials by the European Commission back in 2011 [1]. Although efforts to couple the innovation and translation are in place, the regulatory landscape is excessively stratified and quite heterogeneous. In addition to this structural hindrance, there are further setbacks; for example, the regulation on the use of nanomaterials in cosmetic products is more developed than that for (nano)medical devices and (nano)drugs, which introduces an asymmetry into the natural flow of the R&D pipeline. On the scientific side, many mechanisms behind the tissue-nanomaterial interaction, as well as the fate of nanomaterials inside the body, remain unknown. Finally, the cost-benefit balance also dictates financing and translation of future nanomedical developments.

The future of nanomedicine within the next few decades thus depends on a delicate interplay between scientific, regulatory and economic aspects yet to be properly identified and harmonised. Will nanomedicine live up to our expectations by 2050?

References

1) European Commission (2011) Commission Recommendation of 18 October 2011 on the definition of nanomaterial (2011/696/EU). Off. J. EU L.275, 38–40.