

# Comprehensive Understanding of Bio-nano Interactions-A challenge for future applications of nanoparticles in medicine

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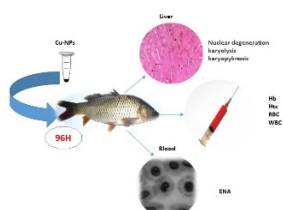
## Abstract

In addition to the great contribution that large scale production and remarkable progress in developing newer nanomaterials, the field of nanotechnology holds great promise for revolutionizing biomedicine. The uniqueness of nanoparticle physico-chemical properties suggests that their interactions with cells and tissues may be unpredictable. Having comparable dimensions, man-made nanoparticles and cellular molecular machines, a possible direct interactions and/or interference of nanoparticles with cellular vital mechanisms can be revealed. In order to design intelligently and use safely and effectively nanomaterials, a holistic understanding of bio-nano interactions is needed. Here, a review of our research in designing a battery of reliable, low cost and specific biomarkers of nanotoxic effects to unearth the mechanisms of bio-nano interactions, is shown. Furthermore, potential opportunities and challenges in applying of these biomarkers in the study of bio-nano interfaces are also provided.

## References

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## Figures



**Figure 1.** Battery of biomarkers of effects to assess toxic effects of nanoparticles.