



Collectively establishing more solid foundations for bionanoscience by annotating and replicating the scientific literature

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Longstanding concerns about nano hype,[1]–[3] the slow translation of nano research into biomedical applications,[4] and lack of reproducibility in nanobiology research[5] show few signs of ameliorating. How much of the scientific record provides a solid foundation (the famous shoulders of giants) on which we can confidently build? How can we equip scientists, in particular younger scientists or those moving into highly interdisciplinary fields such as nanobiology, to make judgements about the validity of articles and claims? How, as a community of scientists, do we progress towards a shared understanding of contested issues? We aim to address these critically important and very challenging questions through two direct interventions: the post-publication peer review (PPPR) and systematic public annotation of a large number of articles, and, a replication project to experimentally test published claims.

We will examine three scientific issues: 1) nanoparticles crossing (or not) the blood-brain barrier, 2) the novelty and importance (or not) of the protein corona, and, 3) the entry of nanoparticles into cells. The first intervention (PPPR) will cover all three issues whilst the second (replication) will focus on entry of nanoparticles into cells, and more specifically, on their use for imaging and sensing in the cytosol. This effort is part of the interdisciplinary project ERC Synergy project NanoBubbles that combines nanobiology, digital and human sciences.

References

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