

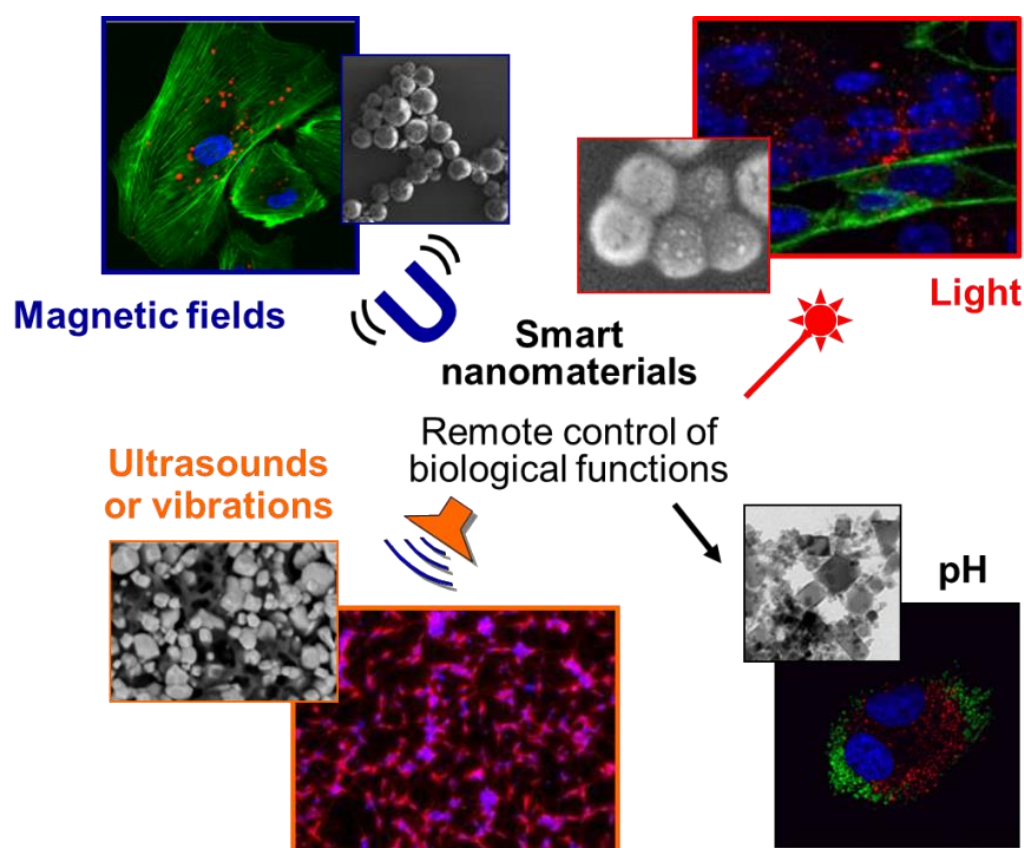
Tuning Cellular Functions through Smart Nanomaterials

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The remote control of cellular functions through smart nanomaterials represents a bio-manipulation approach with unprecedented potential applications in many fields of medicine, ranging from cancer therapy to tissue engineering. By actively responding to external stimuli, smart nanomaterials act as real nanotransducers able to mediate and/or convert different forms of energy into both physical and chemical cues, fostering specific cell behaviors [1, 2]. A new paradigm is proposed for nanomedicine, in order to exploit the intrinsic properties of nanomaterials as active devices rather than as passive structural units or carriers for medications.



References

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- [2] Genchi G.G., Marino A., Grillone A., Pezzini I., Ciofani G. Remote control of cellular functions: the role of smart nanomaterials in the medicine of the future. *Advanced Healthcare Materials*, 6(9): 1700002 (2017)

Gianni Ciofani (born in La Spezia, Italy, on August 14th, 1982), Ph.D., is Senior Researcher Tenured at the *Istituto Italiano di Tecnologia* -Italian Institute of Technology, IIT- (Pontedera, Italy; since 2019), where he is Principal Investigator of the Smart Bio-Interfaces Research Unit (since 2017) and Coordinator of the Center for Materials Interfaces (since 2021). He has been Associate Professor at the Polytechnic University of Torino (Torino, Italy; 2015-2019) and Visiting Professor at Waseda University (Tokyo, Japan; 2021).

His main research interests concern smart nanomaterials for nanomedicine, microphysiological systems, and nanomedicine in altered gravity conditions. He is coordinator or unit leader of several projects (about 6.5 MEur granted): in particular, he was awarded with a Starting Grant and three Proof-of-Concept Grants by the European Research Council (ERC). Thanks to grants from the Italian Space Agency and the European Space Agency, he had the opportunity to carry out four experimental campaigns onboard the International Space Station. In 2018, his real-scale model of the blood-brain barrier was highlighted in the Annual Report on the ERC Activities and Achievements.

Gianni Ciofani is author of about 190 papers on international journals (Scopus *H*-index 52), 3 edited books, and 18 book chapters, and delivered about 70 invited talks/lectures in international contexts. He serves as Reviewer for many funding agencies (including ERC, Swiss National Science Foundation, French National Research Agency, National Science Center of Poland), for about 200 international journals, and as Editorial Board Member of *Bioactive Materials*, *International Journal of Nanomedicine*, *Journal of Physics: Materials*, *Nanomedicine UK*, *Nano Trends*, and *Scientific Reports*; he is Specialty Chief Editor (Nanobiotechnology) for *Frontiers in Bioengineering and Biotechnology*.

During his career, he held courses for B.Sc. and M.Sc. students at the Polytechnic University of Torino and at Waseda University, and is currently holding a course for Ph.D. students at the Sant'Anna School of Advanced Studies (Pisa, Italy); he is / has been supervisor of about 50 M.Sc. students and 20 Ph.D. students.

He is co-founder (2022) and Scientific Advisor of “Kidaria Bioscience SRL”, an IIT spin-off company dedicated to the preparation and characterization of cosmetic and nutraceutical products based on natural-derived active ingredients. He is also co-founder (2021) and member of the executive committee of “ERC in Italy APS”, a non-profit association of ERC awardees born to promote fundamental and frontier research in Italy.

Gianni Ciofani is Knight of the Order of Merit of the Italian Republic, appointed by the President of the Italian Republic on December 27th, 2022.