Application of nanotechnology to inhibit cancer cell proliferation

Ledia Vasjari[1,2]
Stephanie Bresan[2], Ignacio Rubio[2]

[1] Faculty of Natural Sciences, University of Tirana, Tirana, Albania
[2] Center of Molecular Biomedicine, Jena, Germany

ledia.vasjari@fshn.edu.al

Abstract

Cancer represents one of the most unpredictable diseases that not only affects the quality of life but can lead to death in case of inappropriate treatment. The key feature of all cancer cells is related to their uncontrolled proliferation by repeatedly overlooking cell cycle checkpoints. The introduction and development of nanotechnology in cancer research has proven to be extremely useful in several aspects. It has shown promising results for efficient diagnosis, targeted drug delivery, and personalised treatment. One of the most prominent oncogenes found hyperactivated in approximately 30% of all human cancer, is Ras. It has been established that Ras is a crucial player in the induction and control of cell cycle progression. Due to its continuous and high-speed activity as a GTP-ase bound protein, targeting Ras has been an incredible challenge for researchers over the years. We present here a novel technology able to selectively and specifically target endogeneous Ras, diminish its activity and consequently interfere with cell cycle progression. Our approach consists in the direct inhibition of native Ras via manipulation of NF1.

References

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Figure

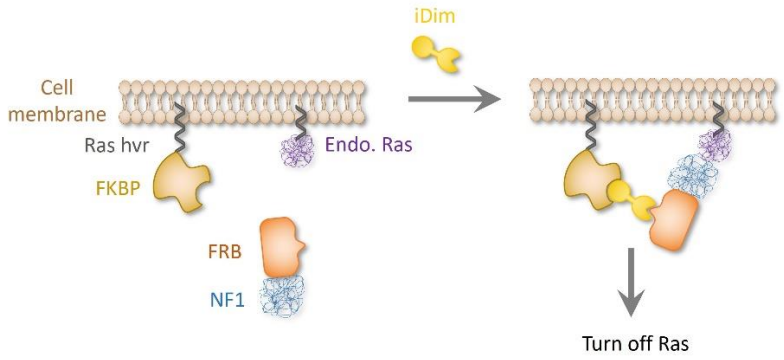

Figure 1. An inducible nanotechnological switch.