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Nanotechnology may provide new hope for brain cancer therapy

Cancer cells are notoriously resistant to drugs intended to kill them by re-routing the signaling networks responsible for cancer cells growth, proliferation and survival. A drug may block a signaling pathway but within a matter of days (minutes in some cases), cancer cells begin to rely on alternate pathways to promote their survival. The simultaneous use of several drugs (rational combination therapy) is meant to attack both the primary and alternate pathways to pre-emptively block the cancer cells escape route. Unfortunately, the efficacy of many combination therapies has been limited because drugs have very different chemical properties, which cause them to travel to different parts of the body and enter cancer cells at different rates. The situation is considerably more complicated for brain cancer (glioblastoma multiform or octopus tumor) because the cancer cells extend their tendrils into the surrounding tissue, which is virtually inoperable, resistant to therapies and always fatal. A major obstacle to treatment is the blood brain barrier or network of blood vessels that allows essential nutrients to enter the brain but block the passage of other substances. The discussion is on the novel nanotechnology approaches for delivering drugs across and around the brain protective barriers.

Biography

Alain L Fymat is a Medical-Physical Scientist at the Universities of Bordeaux and Paris-Sorbonne, France and the University of California at Los Angeles. He is the current President/CEO and Professor at the International Institute of Medicine and Science. He was formerly Professor of Radiology, Radiological Sciences, Radiation Medicine (Oncology), Critical Care Medicine and Physics at many US and European Universities. His current research interests lie at the interface between science and medicine (precision medicine, nanobiotechnology, nanomedicine, genetics/epigenetics/ecogenetics). He has extensively published more than 300 scholarly publications and lectured in several national and international academic, professional, governmental and industrial venues. He is a Board Member of several institutions, Editor of the Journals Nanobiotechnology and Global Nanomedicine and honored Editor of the Journal of Cancer Prevention and Current Research and Nanomedicine Research.

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