Anamaria Orza, Clin Exp Pharmacol 2015, 5:4
http://dx.doi.org/10.4172/2161-1459.S1.008

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World Congress on
Pharmacology

July 20-22, 2015 Brisbane, Australia

Targeting the notch signaling pathways of hepatocarcenoma and glioblastoma multiform using ultra small iron oxide nanoparticles conjuagated gamma secretase inhibitor

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Recent developments in cancer biology have identified the existence of a sub-poplulation of cells—cancer stem cells—that are immune to most traditional therapies (e.g., chemotherapy and radiotherapy) and have the ability to repair their damaged DNA. Here, we show the resistance of hepatocarcenoma stem cells and glioblastoma multiform stem cells to both radiation and therapy. Also, we show the efficiency of the conjugated iron oxide nanoparticles for the in vivo disruption of Notch signaling by the gamma secretase inhibitor DAPT [N-(N-((3,5-Difluorophenacetyl))-L-alanyl)-S-phenylglycerin t-butyl ester. By introducing these targeted conjugated nanoparticles, detection, targeting, and destruction of the Hepatocarcenoma and glioblastoma stem cells was achieved. An efficient alternative treatment for the incurable disease of cancer could be provided.

Biography

Anamaria Orza focuses primarily on the area of development of innovative architectural nano camposites for biomedical applications. Prior to her arrival at Emory in the fall of 2013, she served as a postdoctoral researcher at the Center for Integrative Nanotechnology Sciences at the University of Arkansas at Little Rock. She has been recognized as a European Union fellow, receiving her PhD in Chemistry from Babes Bolyai University, Romania and working in close collaboration with Liverpool University, United Kingdom. She has authored and co-authored 2 patents and over 32 papers in leading journals and at leading international conferences in the field (with over 170 citations) and 2 book chapters in the fields of Applied Nanotechnology in Cancer Research and Tissue Engineering.

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