Philippe Bertrand, Med Chem 2014, 4:12
http://dx.doi.org/10.4172/2161-0444.S1.011

OMICS Group Conferences
Accelerating Scientific Discovery

3rd International Conference on
Medicinal Chemistry & Computer Aided Drug Designing
December 08-10, 2014 DoubleTree by Hilton Hotel San Francisco Airport, USA

Eradication of asbestos tumors *in vivo* with histone deacetylase inhibitors-polymer conjugated nanoparticles for acid-responsive drug delivery

Philippe Bertrand
Institut de Chimie des Milieux et Matériaux de Poitiers, France

The study reports the synthesis of acid-responsive polymeric nanoparticles (NPs) consisting of polymer-histone deacetylase inhibitors conjugate. An innovative aspect lies in the NP conjugation mode of histone deacetylase (HDAC) inhibitors introduced with a clickable acid-responsive prodrug during monomer synthesis, prior to polymerization. The other novelty is due to the selected norbornene (NB)-polyethylene oxide (PEO) macromonomer allowing standardization of the polymerization process by Ring-Opening Metathesis Polymerization (ROMP) and functionalization through azide-alkyne click chemistry. It has been demonstrated that the synthesized polymer gave 300 nm core-shell spherical nanoparticles with low dispersity, high water dispersability thanks to the PEO shell and well controlled HDAC inhibitor prodrugs loading. Bioluminescence Resonance Energy Transfer (BRET) assay in living cells and viability experiments demonstrated efficient cellular internalization without additional chemistry, drug release inside cells with restoration of the HDAC inhibition and induction of apoptosis. Using combination of decitabine and our HDAC inhibitors functional NPs we were able to eradicate mesothelioma cancer cells *in vivo*.

philippe.bertrand@univ-poitiers.fr