Séminaire de l'axe Formulation et analyse du médicament

Nanomedicine for Enhanced Drug Development and Performance

Afsaneh Lavasanifar, Ph.D.
Professeure
Faculté de pharmacie et de sciences pharmaceutiques
University of Alberta

à l'invitation du professeur Davide Brambilla

Lundi, 1er mars 2021 – 12h00 – Via Zoom

Effective clinical performance of many drugs is hampered by their poor water solubility, low bioavailability and severe side effects. Our objective is to develop new pharmaceutical formulations that can correct the undesired properties of potent therapeutic agents and offer less toxic and more effective alternatives to current drugs. Self-associating amphiphilic block copolymers (ABC)s have been the focus of much interest in drug delivery for the above objectives. Our research group has developed a new class of biodegradable and biocompatible ABCs based on poly(ethylene oxide) (PEO) and functionalized poly(e-caprolactone) (PCL). By changing the structure of the side group on PCL, we have developed a library of ABCs capable of forming polymeric micellar nano-carriers as well as thermo/pH responsive hydrogels and applied these new biomaterials for the depot and targeted delivery of several therapeutics. In this presentation, two projects focused on the application of members of this novel nano-platform will be discussed. The first project is focused on the use of poly(ethylene oxide)-poly(α-benzyl carboxylate-ε-caprolactone) (PEO-PBCL) micelles for the delivery of a new inhibitor of DNA repair, known as A83B4C63 developed at the University of Alberta, for the treatment of colorectal cancer. The second project, describes development of temperature and pH responsive hydrogels based on PEO and functionalized poly(caprolactone) (PCL) with benzyl carboxylate and/or carboxyl side groups on PCL and its application in depot ocular delivery of anti-inflammatory medications. Our results, overall, have shown the versatility of ABC library based on functionalized PEO-PCL; making it an excellent platform for developing custom made formulations of existing and emerging therapeutics with improved performance.