

Kattesh V. Katti, M.Sc.Ed, PhD, FRSC
Director, University of Missouri Cancer Nanotechnology Platform
Curators' Professor of Radiology and Physics
Margaret Proctor Mulligan Distinguished Professor of Medical Research
University of Missouri
202 Alton Building, 301 Business Loop 70W
Columbia, Missouri 65212, USA
E-mail: kattik@health.missouri.edu
Telephone: (573)882-5656; Fax: (573)-884-5679
Web Page: <http://www.missouri.edu/~kattik/katti/katti.htm>

Title of Presentation: Clinical Translation of Nanopharmaceuticals for Cancer Therapy

Summary of Presentation: The most recent study involving 77,000 North American men has shown that regular prostate specific antigen (PSA) screening did not provide accurate diagnosis of prostate cancer and therefore did not save lives of cancer patients over 10 years. The lack of accurate diagnostic modalities will translate into more number of men succumbing to prostate cancer with deadly metastatic disease spreading to other organs. Therefore, development of new and highly effective therapeutic interventions for treating prostate cancer patients has become an urgent clinical need. Gold nanoparticles have unique cancer retention properties as their sizes allow efficient penetration within prostate (and other tumors) vasculatures. Therefore, engineered and biocompatible gold nanoparticles can be used as new generation of building blocks in the design and development of targeted cancer therapeutic agents. This presentation will discuss latest findings from our laboratory on the development of glyco protein functionalized therapeutic radioactive gold nanoparticles which have shown efficient targeting/optimum retention characteristics within tumors as they provide synergistic advantages in oncology for molecular imaging and therapy of prostate cancer. We will present recent findings on clinical translation efforts of GA-¹⁹⁸AuNP (NBI-29)—a glyco protein matrix-conjugated radioactive gold nanoparticulate therapeutic agent for treating prostate cancer. Intratumoral administration of a single dose of β -emitting GA-¹⁹⁸AuNP (70 Gy) resulted in clinically significant tumor regression and effective control in the growth of prostate tumors over several weeks with an overall unprecedented >85% reduction in tumor volume in prostate bearing mice. This presentation will include: (a) details on clinical translation efforts of GA-¹⁹⁸AuNP (NBI-29) with early Phase I clinical trial results involving therapeutic efficacy in treating prostate tumor bearing dogs. The overall oncological implications on how GA-¹⁹⁸AuNP can be used to minimize/eliminate surgical resection of prostate cancers providing significant benefits to prostate tumor patient community will be discussed.