

DOI: 10.21767/2254-609X.100023

## Biomedical Study of Cancer Cells DNA Therapy Using Laser Irradiations at Presence of Intelligent Nanoparticles

A Heidari\*

Faculty of Chemistry, California South University, USA

\*Corresponding author: A Heidari. Faculty of Chemistry, California South University (CSU), 14731 Comet St. Irvine, CA 92604, USA, Tel: 1-775-410-4974; E-mail: Scholar.Researcher.Scientist@gmail.com

Rec Date: April 4, 2016; Acc Date: April 5, 2016; Pub Date: April 11, 2016

Copyright: © 2016 Heidari A, This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Citation: Heidari A. Biomedical Study of Cancer Cells DNA Therapy Using Laser Irradiations at Presence of Intelligent Nanoparticles. J Biomedical Sci. 2016, 5:2.

### Editorial

DNA of human cancer cells proliferation depends on energy consumption [1-23]. High-level laser irradiations at presence of intelligent nanoparticles increase energy supply to the cells [24-53]. The aim of this editorial is to analyze whether the laser irradiations at presence of intelligent nanoparticles affect the parameters that characterize DNA of human cancer cells proliferation. Also, in the current editorial, laser irradiations at presence of intelligent nanoparticles prevent the proliferation of DNA of human cancer cells and might be a useful and impressive technique to enhance DNA of human healthy cells using Sigma-Aldrich Corporation clinics guidelines and protocols.

Furthermore, human cancer cells therapy is the transplantation, through local delivery or systemic infusion of DNA of human cancer cells to restore the viability or function of deficient tissues. Intelligent nanoparticles are the best choice for cell therapy because of their ability to replicate and their high potential to produce differentiated cells. Most human tissues contain populations of cancer cells. Intelligent nanoparticles are known to produce a variety of stem cell types needed for periodic tissues renewal and tissues' regeneration after applying laser irradiations. DNA of human cancer cells contains specialized intelligent nanoparticles to maintain as an appropriate protective function. Intelligent nanoparticles are thought to reside at precise locations, termed niches, where they benefit from a unique environment that favors self-renewal through symmetrical or asymmetrical divisions. In recent decade, intelligent nanoparticles have attained a genuine celebrity status. They are considered as the key protective resources for DNA of human cancer cells regeneration and also are proposed as a preferential target of gene therapy.

### References

- Zhong Y, Zhang J, Cheng R, Deng C, Meng F, et al. (2015) Reversibly crosslinked hyaluronic acid nanoparticles for active targeting and intelligent delivery of doxorubicin to drug resistant CD44 + human breast tumor xenografts, *Journal of Controlled Release* 205: 144-154.
- Chen W, Xu V, Jia HZ, Lei Q, Luo GF, et al. (2013) Therapeutic nanomedicine based on dual-intelligent functionalized gold nanoparticles for cancer imaging and therapy in vivo, *Biomaterials* 34: 8798-8807.
- Spencer DS, Puranik AS, Peppas NA (2015) Intelligent nanoparticles for advanced drug delivery in cancer treatment, *Current Opinion in Chemical Engineering* 7: 84-92.
- Wang Y, Zhang Y, Du W, Wu C, Zhao J (2009) Intelligent core-shell nanoparticles and hollow spheres based on gelatin and PAA via template polymerization, *Journal of Colloid and Interface Science* 334: 153-160.
- Yan L, Xing T, Fu L (2016) NIR probe conjugated polymeric nanoparticles for intelligent drug delivery and imaging, *Nanomedicine: Nanotechnology, Biology and Medicine* 12: 529.
- Wang Y, Yan R, Zhang J, Zhang W (2010) Synthesis of efficient and reusable catalyst of size-controlled Au nanoparticles within a porous, chelating and intelligent hydrogel for aerobic alcohol oxidation, *Journal of Molecular Catalysis A: Chemical* 317: 81-88.
- Lo CL, Lin KM, Hsiue GH (2005) Preparation and characterization of intelligent core-shell nanoparticles based on poly(D,L-lactide)-g-poly(N-isopropyl acrylamide-co-methacrylic acid), *Journal of Controlled Release* 105: 477-488.
- Breunig M, Bauer S, Goepferich A (2008) Polymers and nanoparticles: Intelligent tools for intracellular targeting?, *European Journal of Pharmaceutics and Biopharmaceutics* 68: 112-128.
- Dongxiang L, Qiang H, Junbai L (2009) Smart core/shell nanocomposites: Intelligent polymers modified gold nanoparticles, *Advances in Colloid and Interface Science* 149: 28-38.
- Motornov M, Roiter Y, Tokarev I, Minko S (2010) Stimuli-responsive nanoparticles, nanogels and capsules for integrated multifunctional intelligent systems, *Progress in Polymer Science* 35: 174-211.
- Zhou L, Dong K, Zhaowei C, Jinsong R, Xiaogang Q (2015) Near-infrared absorbing mesoporous carbon nanoparticle as an intelligent drug carrier for dual-triggered synergistic cancer therapy, *Carbon* 82: 479-488.
- Jing S, Zeng PC, Jing WJ, Yao C, Ru QY (2014) Quantitative surface-enhanced Raman spectroscopy based on the combination of

- magnetic nanoparticles with an advanced chemometric model, *Chemometrics and Intelligent Laboratory Systems* 135: 31-36.
13. Gurrappa I, Yashwanth IVS (2015) The Importance of Corrosion and the Necessity of Applying Intelligent Coatings for Its Control, In *Intelligent Coatings for Corrosion Control*, edited by Atul Tiwari, James Rawlins and Lloyd H. Hihara, Butterworth-Heinemann, Boston pp: 17-58.
  14. Realini CE, Marcos B (2014) Active and intelligent packaging systems for a modern society. *Meat Sci* 98: 404-419.
  15. Bingtao Z, Yaxin S, Wenwen T(2012) Mass transfer performance of CO<sub>2</sub> capture in rotating packed bed: Dimensionless modeling and intelligent prediction, *Applied Energy* 136: 132-142.
  16. Chan W, Xiaobo H, Weilin D, Chengliang C, Ruiqiang H, et al. (2014) A nano-silver composite based on the ion-exchange response for the intelligent antibacterial applications, *Materials Science and Engineering* 41: 134-141.
  17. Chi HS, Tung-Hsu H (2008) Using multi-population intelligent genetic algorithm to find the pareto-optimal parameters for a nano-particle milling process, *Expert Systems with Applications* 34: 2502-2510.
  18. Huaijuan Z, Jinhua L, Shanhu B, Jian L, Xuanyong L, et al. (2016) Use of ZnO as antireflective, protective, antibacterial, and biocompatible multifunction nanolayer of thermochromic VO<sub>2</sub> nanofilm for intelligent windows, *Applied Surface Science* 363: 532-542.
  19. Lei Z, Zhazhuang Z, Chaohua H, Susan LB, Wendi Y, et al. (2016) Controlled and targeted release of antigens by intelligent shell for improving applicability of oral vaccines, *Biomaterials* 77: 307-319.
  20. Panpan R, Dawei Z, Chaofang D, Xiaogang L (2015) Preparation and evaluation of intelligent corrosion inhibitor based on photocrosslinked pH-sensitive hydrogels, *Materials Letters* 160: 480-483.
  21. Bingwei X, Limei W, Chunxiao J (2015) Stably superhydrophobic (IL/TiO<sub>2</sub>)<sub>n</sub> hybrid films: Intelligent self-cleaning materials, *Applied Surface Science* 357: 2248-2254.
  22. Guang HG, Jae WL, Minh KN, Geun HI, Jehoon Y, et al. (2011) pH-responsive polymeric micelle based on PEG-poly( $\beta$ -amino ester)/(amido amine) as intelligent vehicle for magnetic resonance imaging in detection of cerebral ischemic area, *Journal of Controlled Release* 155: 11-17.
  23. Arturas K, Jevgenija R, Edmundas KZ, Alfonsas D, Valdas P, et al. (2015) Passive House model for quantitative and qualitative analyses and its intelligent system, *Energy and Buildings* 50: 7-18.
  24. Yu G, Jingjing X, Haijun C, Songen G, Rongli Z, et al. (2014) Nanotechnology-based intelligent drug design for cancer metastasis treatment, *Biotechnology Advances* 32: 761-777.
  25. Pradeep P, Junho J, Sanghoon K (2012) Carbon dioxide sensors for intelligent food packaging applications, *Food Control* 25: 328-333.
  26. Zhen L, Xianjun L, Xiang R, Enguo J, Jinsong R, et al. (2015) Single-layer tungsten oxide as intelligent photo-responsive nanoagents for permanent male sterilization, *Biomaterials* 69: 56-64.
  27. Lim LT (2011) *Active and Intelligent Packaging Materials*, In *Comprehensive Biotechnology (Second Edition)*, edited by Murray Moo-Young, Academic Press, Burlington 629-644.
  28. Donatella R, Gianfranco US, Ortensia IP, Giuseppe C, Manuela C, et al. (2010) New EU regulation aspects and global market of active and intelligent packaging for food industry applications, *Food Control* 21: 1425-1435.
  29. Mary CM, Nicholas A (2009) Peppas, Micro- and nanotechnologies for intelligent and responsive biomaterial-based medical systems, *Advanced Drug Delivery Reviews* 61: 1391-1401.
  30. Hui M, Zhengsong Q, Zhonghou S, Weian H, Hanyi Z, et al. (2015) Novel hydrophobic associated polymer based nano-silica composite with core-shell structure for intelligent drilling fluid under ultra-high temperature and ultra-high pressure, *Progress in Natural Science: Materials International* 25: 90-93.
  31. Younsoo B, Kazunori K (2009) Intelligent polymeric micelles from functional poly(ethylene glycol)-poly(amino acid) block copolymers, *Advanced Drug Delivery Reviews* 61: 768-784.
  32. Anatoliy TP, Vitaliy GS (2015) Multifunctional polymer composites for intelligent structures, In *Multifunctionality of Polymer Composites*, edited by Klaus Friedrich and Ulf Breuer, William Andrew Publishing, Oxford 690-708.
  33. Mike V, Peter R, Frank D, Bruno DM (2014) Intelligent food packaging: The next generation, *Trends in Food Science & Technology* 39: 47-62.
  34. Xiaowei W, Yanfang H, Xiaohong W, Li C (2015) Thermo-responsive polymer micelle-based nanoreactors for intelligent polyoxometalate catalysis, *Catalysis Communications* 58: 164-168.
  35. Piyush SS, Zofia I, Agnieszka P, Francis D, Wlodzimierz K (2015) Bioinspired intelligent molecularly imprinted polymers for chemosensing: A mini review, *Electrochemistry Communications* 50: 81-87.
  36. Younsoo B, Rita AB, Tracy PW, Tze-Haw HC, Darin YF (2007) Intelligent biosynthetic nanobiomaterials for hyperthermic combination chemotherapy and thermal drug targeting of HSP90 inhibitor geldanamycin, *Journal of Controlled Release* 122: 16-23.
  37. Wilson JIB, Mather RR (2015) 8 - Photovoltaic energy harvesting for intelligent textiles, In *Electronic Textiles*, edited by Tilak Dias, Woodhead Publishing, Oxford 155-171.
  38. Culver H, Daily AM, Khademhosseini A, Nicholas AP (2014) Intelligent cognitive systems in nanomedicine, *Current Opinion in Chemical Engineering* 4: 105-113.
  39. Liao H (2014) Integrated diagnostic and therapeutic techniques: Toward an intelligent medical system, *Computerized Medical Imaging and Graphics* 38: 421-422.
  40. Roman L, Xueya W, Stephan M, Patrick H (2013) Intelligent nanomaterials for medicine: Carrier platforms and targeting strategies in the context of clinical application, *Nanomedicine: Nanotechnology, Biology and Medicine* 9: 742-757.
  41. Hongyan H, Xia C, James LL (2004) Design of a novel hydrogel-based intelligent system for controlled drug release, *Journal of Controlled Release* 95: 391-402.
  42. Mansilla E, Spretz R, Larsen R, Nuñez L, Drago H, et al. (2010) Outstanding Survival and Regeneration Process by the Use of Intelligent Acellular Dermal Matrices and Mesenchymal Stem Cells in a Burn Pig Model, *Transplantation Proceedings* 42: 4275-4278.
  43. Célia SB, Éva T (2010) Towards highly efficient, intelligent and bimodal imaging probes: Novel approaches provided by lanthanide coordination chemistry, *Comptes Rendus Chimie* 13: 700-714.
  44. Culver H, Daily A, Khademhosseini A, Peppas N (2014) Intelligent cognitive systems in nanomedicine. *Curr Opin Chem Eng* 4: 105-113.
  45. Drago H, Marín GH, Sturla F, Roque G, Mártire K, et al. (2010) The Next Generation of Burns Treatment: Intelligent Films and Matrix,

- Controlled Enzymatic Debridement, and Adult Stem Cells, Transplantation Proceedings 42: 345-349.
46. Hirohisa T, Mari U, Masashi T, Isao T, Keiichi N, et al. (2006) The intelligent catalyst having the self-regenerative function of Pd, Rh and Pt for automotive emissions control, *Catalysis Today* 117: 321-328.
  47. Taoukis P, Smolander M (2008) Biobased intelligent food packaging, In *Woodhead Publishing Series in Food Science, Technology and Nutrition*, edited by Emo Chiellini, Woodhead Publishing 439-458.
  48. Anthony ML, Thomas DD, Petr B, Nicholas AP (2004) Structural and dynamic response of neutral and intelligent networks in biomedical environments, *Advances in Chemical Engineering*, Academic Press 29: 75-130.
  49. Lauten EH, Peppas NA (2009) Intelligent drug release using molecular imprinting methods *Recognitive systems for* angiotensin II, *Journal of Drug Delivery Science and Technology* 19: 391-399.
  50. Nakayama M, Okano T (2006) Intelligent thermoresponsive polymeric micelles for targeted drug delivery, *Journal of Drug Delivery Science and Technology* 16: 35-44.
  51. Atul T, Hihara LH (2015) Sol-Gel Route for the Development of Smart Green Conversion Coatings for Corrosion Protection of Metal Alloys, In *Intelligent Coatings for Corrosion Control*, Butterworth-Heinemann, Boston 363-407.
  52. Pravin A, Rahul BA, Agnieszka G, Tomasz P, Kunal R (2015) "NanoBRIDGES" software: Open access tools to perform QSAR and nano-QSAR modeling, *Chemometrics and Intelligent Laboratory Systems* 147: 1-13.
  53. Heidari A (2012) A Thesis submitted to the Faculty of the Chemistry, California South University (CSU), Irvine, California, USA.