

# Applications of Nanorobotics in Medicines

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**Abstract:** *Nanorobotics is the technology of producing robots or machines with very small scale or miniscule of a nanometre ( $10^{-9}$  meters), machines constructed at the molecular level (Nano machines) may be used to cure the human body of its various diseases like cancer. Nano robots perform a specific task with great accuracy and precision at nanoscale dimensions. Nano robots are especially used for studies on osteosclerosis treatment and cancer treatments. Nanotechnology promises futuristic applications such as microscopic robots that assemble other machines or travel inside the body to deliver drugs or API or do microsurgery. Current treatment includes surgeries which are considered out-dated when compared to nanotechnology or nanorobotics technology.*

**Keywords:** Nano robots, Biochip, Nubots, Nanoswimmers, Treatment, Disease. etc.

## REFERENCES

- [1]. Adrino Cavalcanti, et al. (2008). Nanorobot hardware architecture for medical defense. *Sensors*, 8: 2932–2958.
- [2]. Alfadul, S.M. and Elneshwy, A.A. (2010). Use of nanotechnology in food processing, packaging and safety review. *African Journal of Food, Agriculture, Nutrition and Development*, 10(6): 2719–39.
- [3]. Annabelle, Hett. (2004). Nanotechnology: Small matter, many unknowns, Swiss Reinsurance Company (<http://www.swissre.com>)
- [4]. Cavalcanti, A., Freitas Robert, A.Jr. and Kretly Luiz, C. (2004). Nanorobotics control design: A practical approach tutorial. ASME 28th Biennial Mechanisms and Robotics Conference, Salt Lake City Utah, USA.
- [5]. Cavalcanti, B., Shirinzadeh, R.A., Freitas, Jr. and Kretly, L.C. (2007). Medical nanorobot architecture based on nanobioelectronics, recent patents on nanotechnology, *Bentham Science*, 1(1): 1–10.
- [6]. Davis, S.S. (1997). Biomedical application of nanotechnology-implications for drug targeting and gene therapy. *Trends in biotechnology*, 15: 217–24.
- [7]. Drexler KE. *Engines of creation*/ K. Eric Drexler; foreword by Marvin Minsky: Garden City, N.Y.: Anchor Press/Doubleday, 1986. 1st ed.; 1986.
- [8]. Farokhzad, O.C. and Robert, Langer. (2009). Impact of nanotechnology on drug delivery. *ACS Nano.*, 3(1): 16–20.
- [9]. Feynman R.P. (1960). There is plenty of room at the bottom. California Institute of Technology. *Journal of Engineering Science*, 4(2): 23–36.
- [10]. Jain Kewal, K. (2007). Applications of nanobiotechnology in clinical diagnostics. *Clinical chemistry. Oak ridge conference.*, 53(11): 2002–2009.
- [11]. Kubik, T., Bogunia-kubik, K. and Sugisaka, M. (2005). Nanotechnology on duty in medical applications. *Current pharmaceutical biotechnology*, 6: 17–33.
- [12]. Kumar, S.S and Babu, P.S. (2006). Nanotechnology. *Pharma Times*, 38: 18–19.
- [13]. Leary, S.P., Liu, C.Y. and Apuzzo, M.L.I. (2006). Toward the emergence of nanoneurosurgery: Part III - Nanomedicine: Targeted nanotherapy, nanosurgery and progress toward the realization of nanoneurosurgery. *Neurosurgery*, 58(6): 1009–1025.
- [14]. Mandal, G. and Ganguly, T. (2011). Applications of nanomaterials in the different fields of photosciences. *Indian Journal of physics*, 85(8): 1229–45.
- [15]. Parakh, S.R., Swati, C., Jagdale, S., Dodwadkar Namita, S. and Savalia Kashyap, D. (2008). Nanotechnology, *The Indian pharmacist*, 15–18.
- [16]. Qusimchaudhry. (2012). Nanotechnology applications for the food sector and implications for consumer safety and regulatory controls. [www.jifsan.umd.edu](http://www.jifsan.umd.edu) accessed on 03 August 2012.

- [17]. Rathi, Ravindran. (2011). Nanotechnology in cancer diagnosis and treatment: An overview. Oral and Maxillofacial Pathology Journal, 2(1): 101–106.
- [18]. Hill, C, Amodeo, A, Joseph, J V, Patel HRH; Nano and microrobotics: how far is the reality? Expert review of anti-cancer therapy, 2008; 8(12): 1891-1897.
- [19]. Couvreur P, Vauthier C; Nanotechnology: Intelligent design to treat complex disease. Pharmaceutical research, 2006; 23(7): 1417-1450.
- [20]. Elder J B, Huh D J, Oh B C, Heller A C, Liv C Y, Apuzzo M L; The future of cerebral surgery a kaleidoscope of opportunities. Neurosurgery, 2008; 62(6): 1555-1579.
- [21]. LaVan D A, Mc Guire T, Langer R; Small-scale systems for invitro drug delivery. Nature Biotechnology, 2003; 21(10): 1184