Developments on Nanorobots with System on Chip May Advance Cancer Diagnosis

- Mouse Tests Predict Drug Response In Relapsing Pancreatic Cancer Patients
- Protein As Potential Tactic To Prevent Tumors
- Algae Provide New Clues To Cancer
- Genentech Announces Annual Expenditure Cap of $55K for Cancer Medication Avastin
- Adult Survivors Of Childhood Cancer Face Long-Term Health Problems

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Cancer Diagnosis and Treatment

Advances on nanotechnology are enabling manufacturing nanosensors and actuators based on CMOS manufacturing techniques. The implementation of sensors, nanotransistor and integrated circuits with nanoscale sizes most recently has become a reality. Hybrid approaches using nanotubes, photonics and mesoscopic nanowires as elements for design are accelerating even more the manufacturing of nanoelectronics. As a consequence of it, the use of nanorobots in medicine is a natural process on manufacturing techniques now in progress.

The use of nanorobots may bring unprecedents advances for cancer diagnosis and treatment. It may help biomedical intervention with minimally invasive surgeries to extract malignant tumor in brain, and also improve early diagnosis of several diseases. To accomplish such tasks, the nanorobots can use chemical communication and sensors to achieve decentralized control for a distributed collective action. The same approach is useful to the combat of cancer.

A higher gradient of E-cadherin signals is useful as chemical parameter for identification of malignant tissues. This information may become crucial for early cancer diagnosis. Active electromagnetic and thermal nanosensors can enable a broader range of identification patterns for a more efficient cancer treatment. Infrared arrays integrated on a single chip within amplifiers and signal processing capabilities can be successfully used as patterns to design nanochip sensors for manufacturing nanorobots.

A full study was accepted for publication at ICARCV, and can be accessed yet on-line at www.nanorobotdesign.com/papers/communication.pdf. The paper presents the nanorobots and the system simulation to monitor intensity and concentration of E-cadherin signals to help in earlier cancer diagnosis. The manuscript describes the simulation with clinical based data helping as well in manufacturing design.

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created in 2004 through the collaboration of private funds. CAN as a private company focuses on investigation of new paradigms for innovation in systems and automation design.

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