



NCI Alliance for
Nanotechnology
in Cancer

NCI Alliance for Nanotechnology in Cancer RFA Re-issuance

Piotr Grodzinski, Ph.D.
NCI Executive Committee Meeting
September 23, 2008

Alliance for Nanotechnology in Cancer (ANC) Current Program

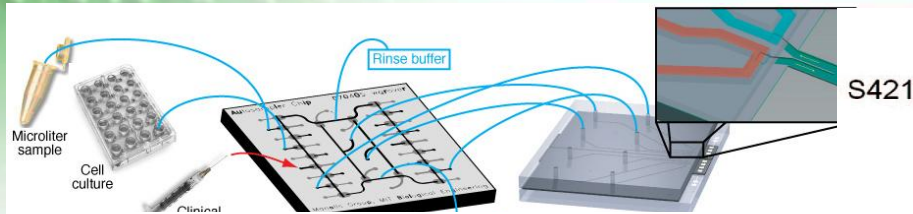
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Current

- Medical applications of nanotechnology require multi-disciplinary approach involving both technology developers and technology users in the process of scientific innovation and technology development
 - Milestone driven program leveraging innovation in nanodevices and nanomaterials for cancer applications was launched by NCI in 2004.
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- **8 Centers of Cancer Nanotechnology Excellence (CCNEs)**
 - **12 Cancer Nanotechnology Platform Partnerships (CNPPs)**
 - **11 F32 and F33 Fellowship Awards**
 - **4 IGERT Training Awards (jointly with NSF)**
 - **Nanotechnology Characterization Laboratory (NCL)**

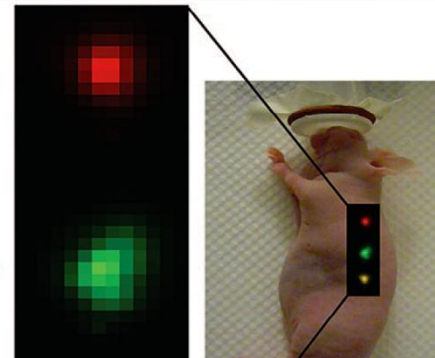
Scientific Accomplishments - Highlights

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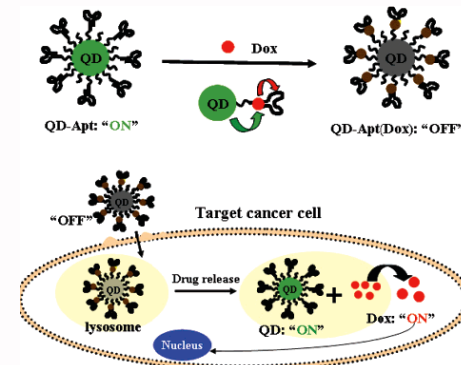
Scott Manalis, MIT CNPP

- Ultra-sensitive detection of circulating tumor cells using suspended microchannel resonant mass sensor (SMR) has been demonstrated.
- Electrokinetic concentrator (1 million fold) allows for evaluating samples of very low concentration (1 fg).



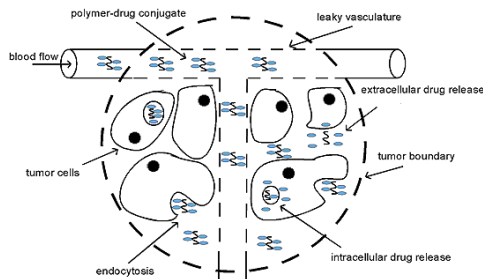
Sam Gambhir, Stanford CCNE

- Gold nanoparticles and carbon nanotubes have been used as surface-enhanced Raman labels for multiplexed *in vivo* imaging of tumors in Raman spectroscopy. This technique allows for rapid studies of the effects of nanoparticle size, targeting, and drug dosing affects.



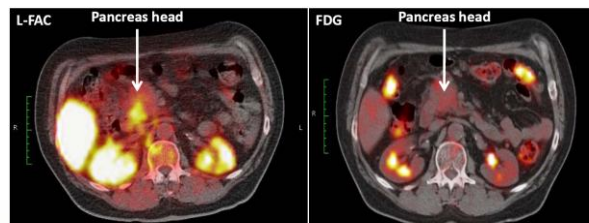
O. Farokhzad and R. Langer, MIT/Harvard CCNE

- Efficacy of paclitaxel and doxorubicin delivered using PSMA targeted PLGA nanoparticles has been demonstrated. Quantum dot reporter, part of the construct, indicates the level of drug release.



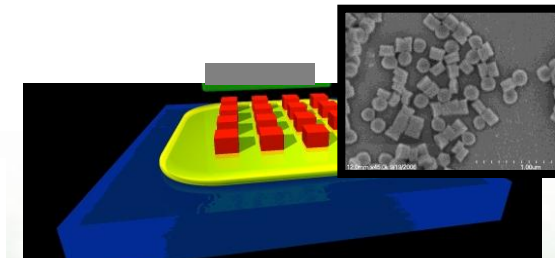
Mark Davis, Caltech/UCLA CCNE

- Cycloset™ nanoparticles carrying camptothecin and siRNA have been used in Phase I clinical trials, respectively. Clinical trial with camptothecin is showing improved pharmacokinetics and pharmacodynamics of the cargo drug with stealthiness to the immune system.



Michael Phelps, Caltech/UCLA CCNE

- [18F]FAC PET probe, synthesized in microfluidic circuits, is being evaluated for biodistribution in newly started clinical trial.



Joe DeSimone, UNC CCNE

- Diversified nanoparticle fabrication platform has been developed based on semiconductor lithographic techniques. Accurate control of particle size, shape, and cargo can be achieved.

Partnerships with Industry – Technology Commercialization

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