



NCI Alliance for
Nanotechnology
in Cancer

NCI Alliance for Nanotechnology in Cancer Status Report

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Board of Scientific Advisors

March 8, 2010

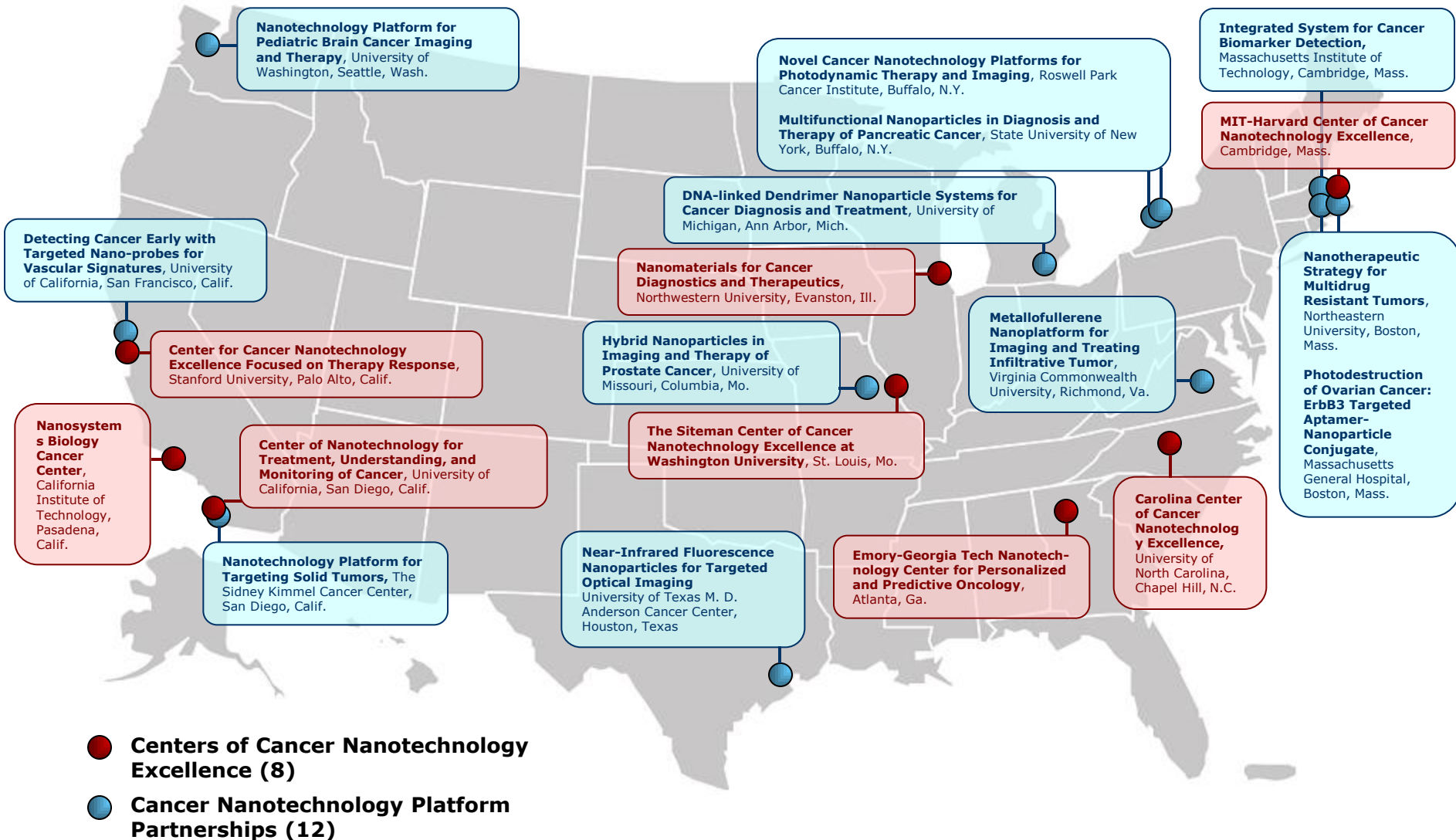
Cancer Nanotechnology

The Opportunity

- Combine power of innovation in nano-materials and cancer biology to develop new solutions in cancer
- Detect Disease *Before* Health Has Deteriorated
 - Sensors
 - Imaging
- Deliver Therapeutics
 - Local delivery
 - Improved efficacy
 - Post-therapy monitoring
- Develop Research Tools to Enhance Understanding of the Disease

NCI Nanotechnology Alliance - Awards

NCI Alliance for
Nanotechnology

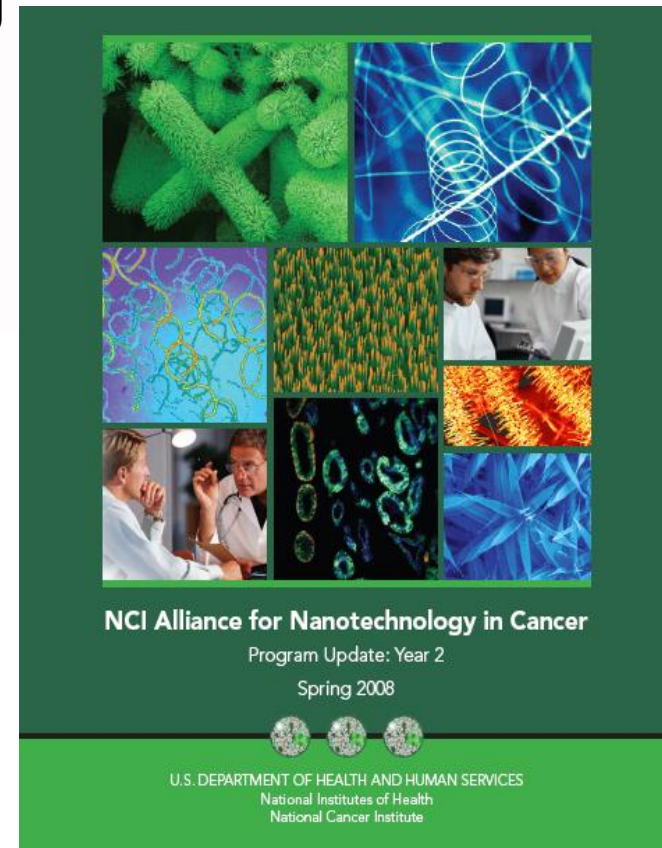


Alliance Score Card

NCI Alliance for
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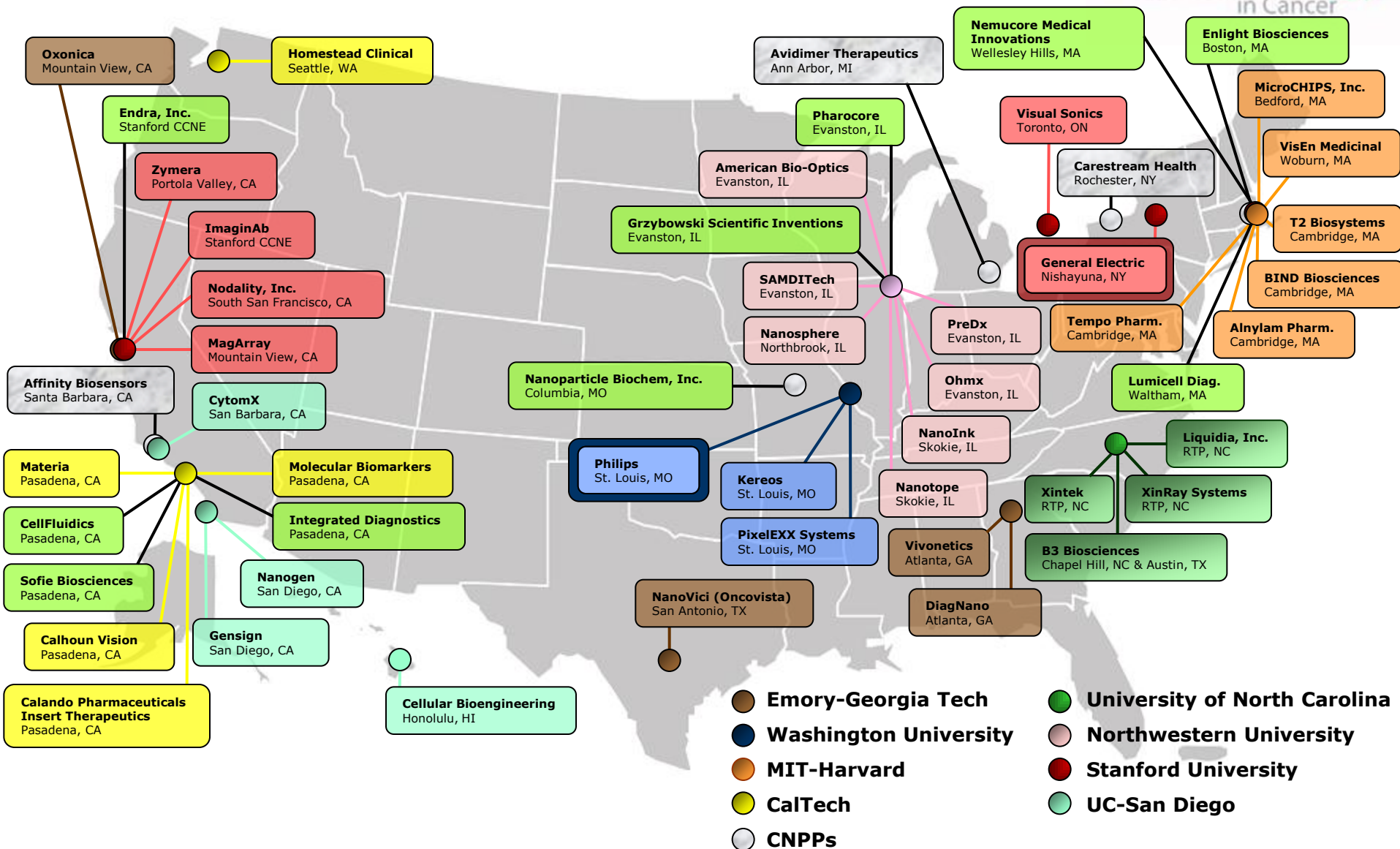
- **Scientific output** : Over 1000 peer-reviewed journal papers published with average impact factor ~7. Strong evidence of establishing joint projects: growing number of publications involving multiple PIs
- **Clinical Translation**: 8 clinical trials underway; several companies in pre-IND discussions with FDA
- **Commercialization Efforts**: over 50 companies associated with the Alliance – 10 formed in last one year
- **Technology**: Over 200 disclosures and patents filed
- **NCL**: Leader in characterization of nanotechnologies
- **Leveraged funding**: Significant additional funding to CCNEs (grants, philanthropy, industry, and venture investors).

**Unprecedented Teams, Technology - Science
Convergence and - Engagement of Cancer
Biologists and Oncologists**



NCI Nanotechnology Alliance Commercial Partners

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Alliance Investigators and Clinical Trials

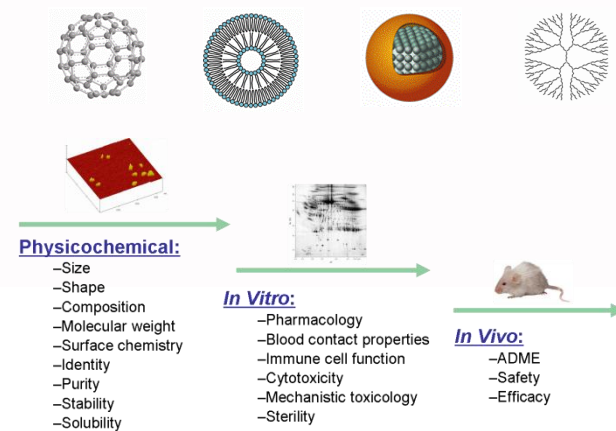
- **In-vitro assays:**
 - Testing of PSA clinical samples using bio-barcode – **Ch. Mirkin, Sh. Thaxton** - Northwestern University
 - Blood Barcode Microfluidics – **J. Heath, P. Mischel**, Caltech/UCLA
- **Imaging:**
 - PET agent synthesized in microfluidics – **M. Phelps, C. Radu** - UCLA
 - MRI agent – Kereos and **G. Lanza, S. Wickline** - Washington University
 - MRI agent – **R. Weissleder** - Harvard
- **Therapy:**
 - Adenovirus nanoparticles for immune gene therapy – **T. Kipps** - UCSD
 - Camptothecin on polymeric nanoparticles - Calando Pharm. and **M. Davis** - Caltech
 - siRNA on polymeric nanoparticles - Calando Pharm. and **M. Davis** - Caltech

Nanotechnology Characterization Laboratory (NCL)

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- Interagency collaboration with FDA and NIST to develop and standardize characterization methodology for nanomaterials
- NCL achieved prominent standing in nanotechnology community and is used as a model for establishing efforts in academia and industry
- Serving as a bridge to bring NCI and Alliance nanotech investigators to the FDA



Achievement:

- More than 165 individual nanoparticles undergoing characterization
 - 50 Active collaborations (MTAs)
 - In 2008, 14 new MTAs, 13 CDAs, 1 CRADA with GE
 - 45 animal studies to date

Scott McNeil
Anil Patri

Nanotechnology Characterization Laboratory (NCL)



NCI Alliance for
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Imperial College
London

ALNIS BIOSCIENCES, INC.



CEDARS-SINAI MEDICAL CENTER.



SYNERGENE



UCLA Department of Chemistry
& Biochemistry

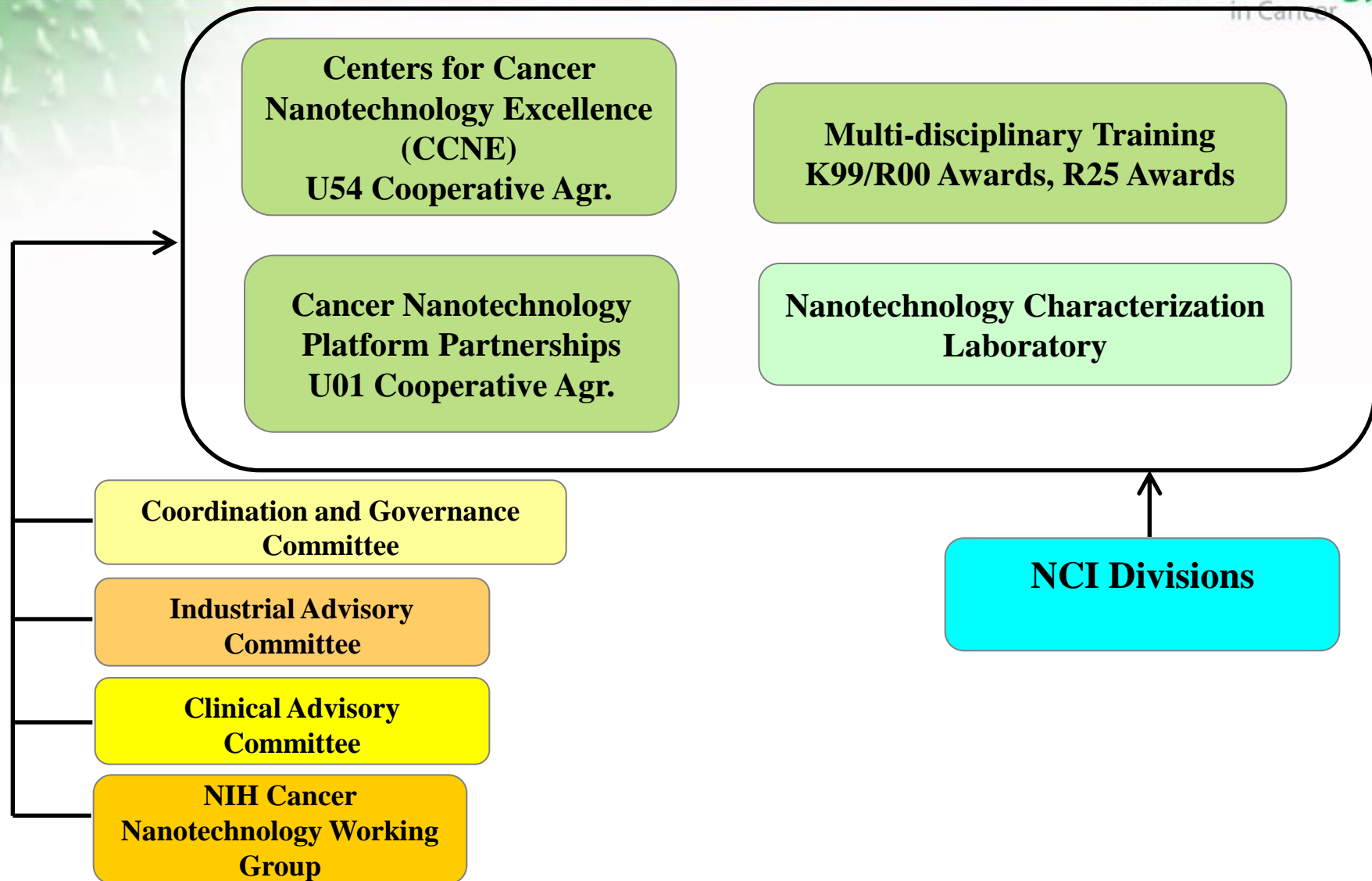
PURDUE



NANOPARTICLE BIOCHEM, INC.

NCI Alliance for Nanotechnology in Cancer – Phase II - Organizational Structure

NCI Alliance for
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Agenda

- | | |
|--|---|
| Dr. A. Barker
Dr. P. Grodzinski | Introductions |
| Dr. Angela Belcher | Genetically engineering biology to make new materials for cancer detection and therapeutics |
| Dr. Milan Mrksich | Nanoscale Constructs for Cancer Therapy |
| Dr. Paul Mischel | Towards a future of personalized cancer care for glioblastoma patients through development and implementation of novel molecular diagnostic tools |
| Dr. Mark Davis | Nanoparticle Therapeutics: Concept to Clinic |