High-Precision Therapeutics through Medicinal Nanoengineering®
Executive Summary

- Medicinal Nanoengineering® enables enhanced trafficking of drugs to tumors, resulting in better efficacy and therapeutic index
- Demonstrated to improve TI of cytotoxic agents and molecularly targeted cancer drugs
- Physicochemical and biopharmaceutical properties of many oncology compounds (marketed and developmental) are extremely compatible with the BIND platform
BIND Medicinal Nanoengineering platform

BIND Targeted Nanoparticle

- Controlled release polymers
- API
- Stealth and protective layer
- Targeting ligand

Features

- High drug concentrations in target tissues
  - Long circulating half-life
  - Tunable biodistribution
  - Immune system evasion
  - Dual targeting mechanisms
- Unmodified API
- Wide range of APIs
- FDA approved, biocompatible, biodegradable polymers
- Robust, reproducible and scalable manufacturing

Best in class Drugs

- Expanded Therapeutic Index
- Enabling of Difficult APIs
- Expanded Indications and Lifecycle
- High Barriers to Generics
- Clear Regulatory Path
- Low COGS

BIND Targeted Nanoparticle Features

Controlled release polymers
API
Stealth and protective layer
Targeting ligand
Our first clinical stage product: BIND-014

- **BIND-014 goal**: Best-in-class taxane

- **Target**: PSMA
  - Clinically validated target with widespread solid tumor expression
  - Prostate cancer cell surface (95% of patients)
  - Non-prostate solid tumor neovasculature (> 80% of breast, colorectal, renal and bladder cancer patients)

- **Payload**: Docetaxel
  - Approved for prostate, breast, lung, gastric, and head/neck cancers

- **Development pathway**
  - Well-defined 505(b)(2) registration pathway
  - Ongoing Phase 1 clinical study in solid tumors
BIND-014 and Taxotere PK

Tumor Bearing Mice

- Docetaxel
- BIND-014

Monkeys

- DTXL (M 9925)
- BIND-014 (M 9560)
- DTXL (F 9579)
- BIND-014 (F 9250)

Rat GLP tox PK

Day 1

- 60 mg/m² Taxotere
- 20 mg/m² BIND-014
- 40 mg/m² BIND-014
- 60 mg/m² BIND-014

Day 22
BIND-014 and Taxotere tumor targeting

LNCaP prostate cancer model

Breast (MX-1) Tumor Targeting (24 h)
BIND-014 efficacy and tolerability

LNCaP Prostate Xenograft Model
5 mg/kg (Q4D x 4)

Body Weight Data for LNCaP
5mg/kg (Q4D x 4)

MX-1 Breast Xenograft Model
10 mg/kg (Q4D x 3)

Spontaneous PSMA+ Prostate 5mg/kg (Q4D x 2)
BIND-014 Phase 1 clinical study

- **BIND-014-001**
  - A Phase 1 Open Label, Safety, Pharmacokinetic and Pharmacodynamic Dose Escalation Study of BIND-014, Given by IV Infusion to Patients with Advanced or Metastatic Cancer

- **Investigators**: Dan Von Hoff (Tgen), Pat LoRusso (Karmanos), Peter Eisenberg (Marin Cancer Center)

- **Primary objective**
  - Assess the dose limiting toxicities of BIND-014, determine the maximum tolerated dose when given once every three weeks, and select a dose for use in Phase 2 clinical studies

- **Secondary objectives**
  - Characterize the PK profile of BIND-014
  - Assess any preliminary evidence of anti-tumor activity
Medicinal nanoengineering of partner kinase inhibitor

**In vitro release**

**PK in rats**

**Enhanced tumor accumulation**

**Efficacy at lower dose**
BIND Medicinal Nanoengineering platform

1. DESIGN
   Combinatorial libraries of targeted nanoparticles to map critical properties

2. ENGINEER
   In vitro and in vivo optimization

3. MANUFACTURE
   Scale up for pre-clinical, clinical and commercial development

Broad and robust IP portfolio
BIND manufacturing trade secrets
BIND overview

BIND was founded in 2006 by two pioneering academic investigators…

Robert Langer, ScD – MIT, David H. Koch Institute Professor
Omid Farokhzad, MD – Harvard Medical School, Associate Professor

…is led by an experienced team of successful entrepreneurs and drug developers…

Scott Minick – President & CEO
ARCH Venture Partners, SEQUUS, Baxter, Lilly

Jim Wright, PhD – CSO
Infinity, Millennium, Alkermes, BI

Ed Schnipper, MD – CMO
ALZA, SEQUUS, Roche

Andrea Franz – CFO
Franz Assoc., ESS, Groundwater Technologies

Jeff Hrkach, PhD – SVP, Pharm Sci
Momenta, Alkermes, AIR

Steve Zale, PhD – VP, Development
Alkermes, Sepracor

Paul Burgess, JD – VP, IP
J&J, TransForm, Genetics Institute

Eidetica Biopharma, Biogen Idec

…and has been backed by leading VC firms and US government
BIND high-precision therapeutics through Medicinal Nanoengineering

MIT Technology Review 2010
50 Most Innovative Companies

MIT Technology Review 2011
50 Most Innovative Companies

Betting on Nanotech Therapies

Cancer treatment dodges immune system