

POLYMER
Therapeutics LLC



The polymer *IS* the drug.™

Dr. Ronald N. DeMartino, President and CTO

BIONJ Biopartnering Conference: June 15, 2010

The polymer */S* the drug.TM

Management Team

Martin Jeiven, MS, Bpharm, RPh – *Chairman and CEO*

- Jeiven Pharmaceutical Consulting, AdiraMedica, Ortho, Ciba-Geigy
- Quality assurance, FDA compliance, product development

Ronald DeMartino, PhD – *President and CTO*

- Polymerix, Hoechst Celanese, National Starch & Chemical
- Polymer science and chemistry, medicinal and pharmaceutical chemistry, new product development

Ash Sharma, PhD – *VP, Regulatory Affairs*

- Jeiven Pharmaceutical Consulting, Vysteris, Becton Dickinson
- Business development, regulatory affairs

Bill Hammond, PhD – *Director, Research & Development*

- New Jersey Institute of Technology, Hoechst Celanese, Allied Chemical
- Polymer science and chemistry; analytical methods development

Arvind Bhandari, MS – *Director, Quality Assurance*

- Jeiven Pharmaceutical Consulting, AdiraMedica, Shasun Chemicals
- Quality assurance, scale-up manufacturing

Executive Summary

Need

- **Novel technology that provides the controlled, sustained, and local delivery of drugs without side effects**

Novel Solution

- **Conversion of drugs into polymers**
- **Shape, size, and delivery rate are customer-specific**

Addressable Markets

- **Wound care**
- **Osteoarthritis, Rheumatoid Arthritis and Bursitis**
- **Sports injuries**
- **Animal health**

Company Status

- **Exclusive license from Rutgers University**
- **Managed by a seasoned executive team**
- **Leveraging 6+ years of corporate development in lead product**

Company History

Rutgers University

- **Core polymer technology developed in the lab of Kathryn Uhrich, PhD**
 - **Post-doctoral work at MIT with Robert Langer**

Polymerix Corporation

- **Specialty Pharmaceutical company founded by Dr. Uhrich**
- **Polymerix raised \$16M between 2000 and 2006**
- **Company wound down in 2006 and Polymer Therapeutics has acquired its core polymer assets**

Overview of Polymer-based Drug Delivery

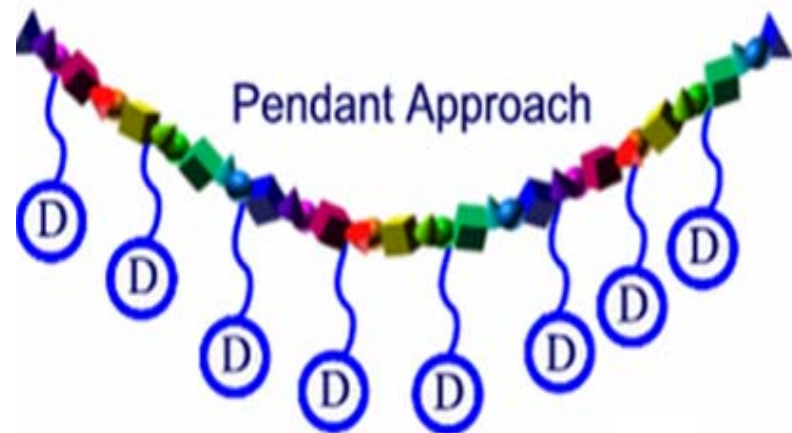
Admixed Polymer Drugs

- A blend of bioerodable polymer carrier and a drug
- Carrier polymers often break down into inflammatory by-products
- Initial burst of drug and inadequate control of drug release



Pendant Polymer Drugs

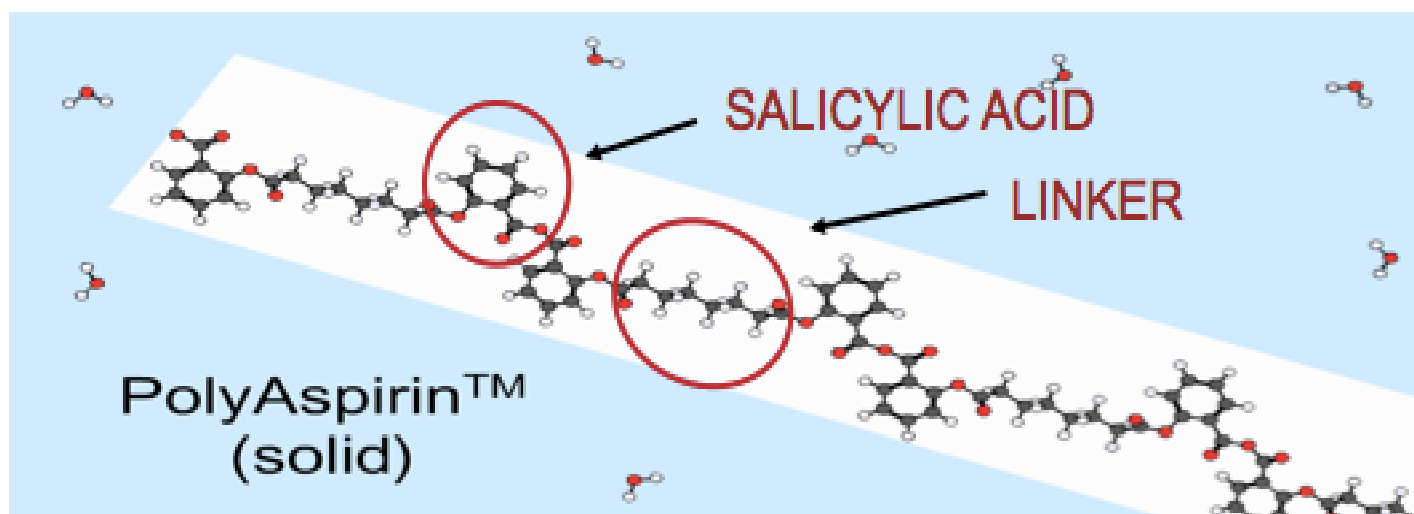
- Drugs are attached to polymer chains
- Inflammatory side products
- Used polymer can accumulate in tissues
- Lower potency



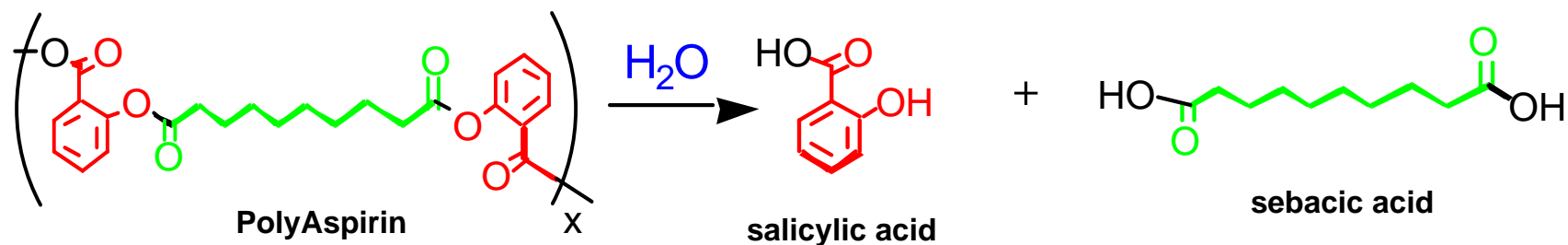
Core Technology - PolyNSAIDs™

PolyNSAIDs

- Active ingredient = salicylic acid or diflunisal
- Linker = sebacic acid



Drug Release Mechanism



The Polymer Therapeutics Advantage

Optimal drug potency

- **High concentration of active agents**
- **Decreases side effects**
- **Works on poorly soluble drugs**

Customizable drug release

- **Breakdown rate controlled by the polymer structure**
- **Prevents “burst” effect**
- **No inflammatory intermediates**

Manufacturing made simple

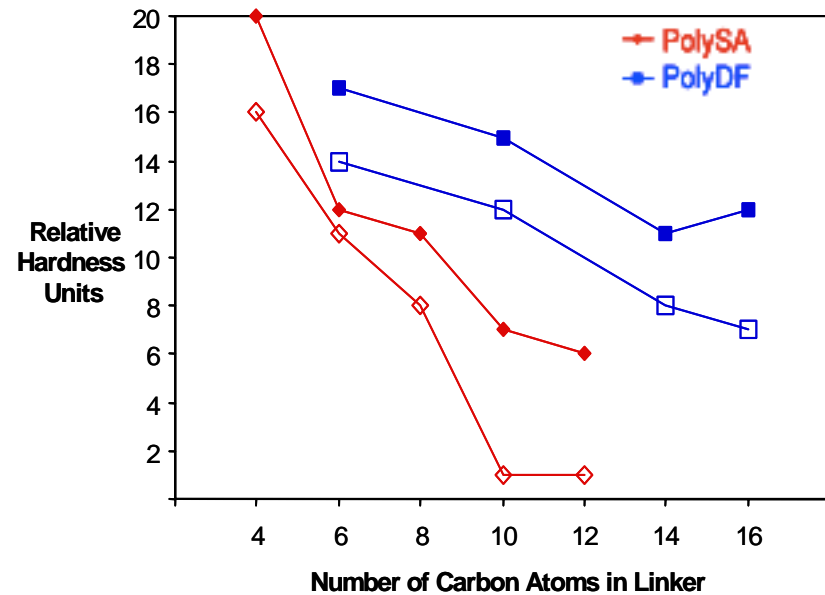
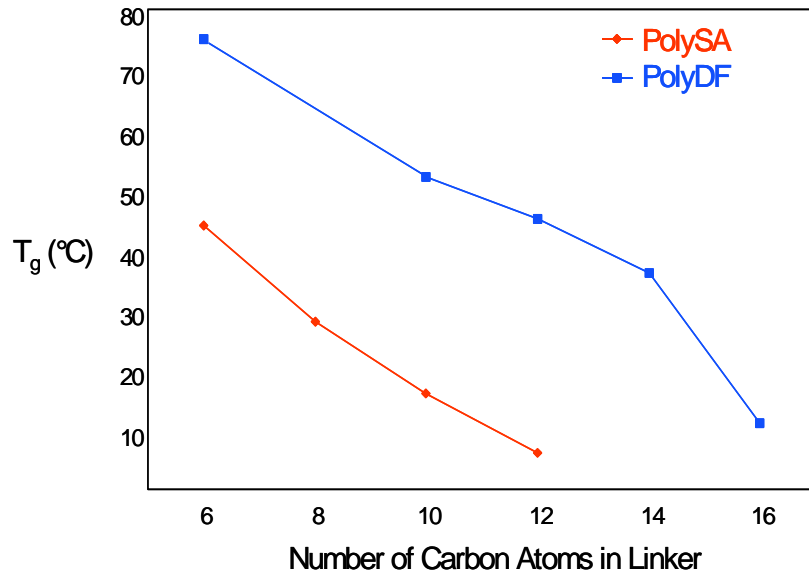
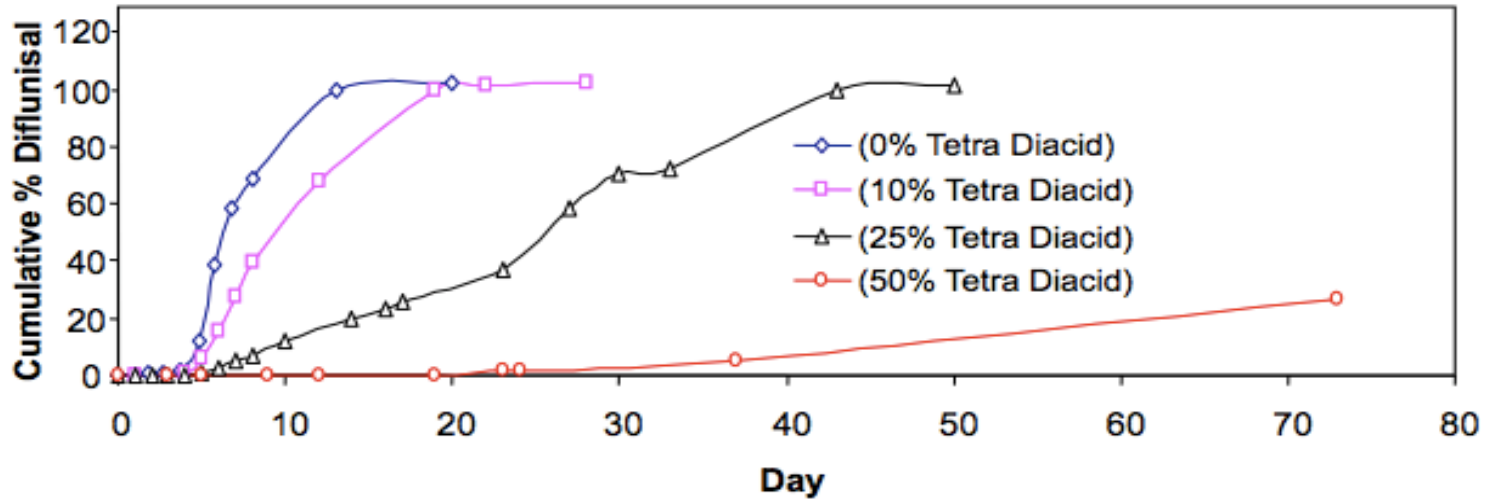
- **Drug is incorporated into the polymer architecture**
- **No compatibility issues**
- **No need for solubility modifiers**

End user control

- **Prevents drug abuse and misuse**

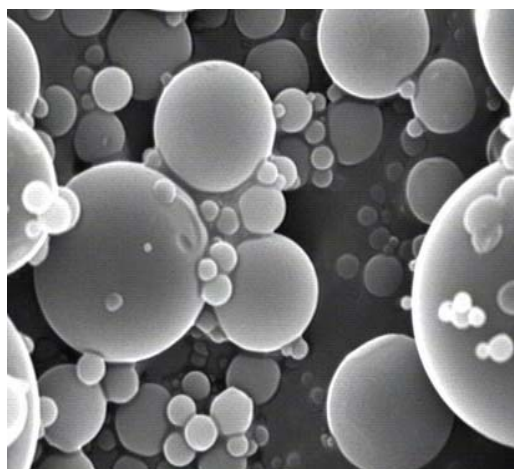
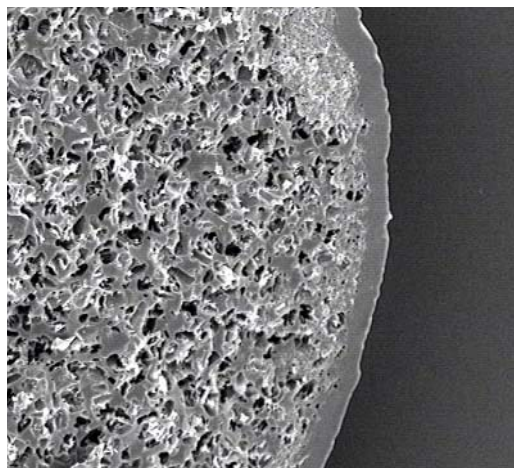
Proof of Concept - PolyNSAIDs

Coated Coupons: PBS Elution of 5 micron coatings
%Diflunisal Release vs. Time

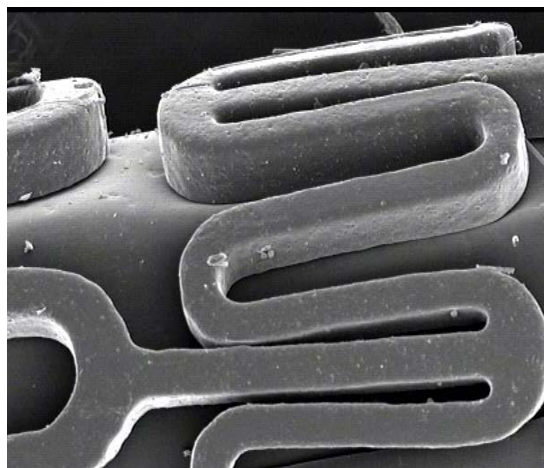


Broad Product Development Platform

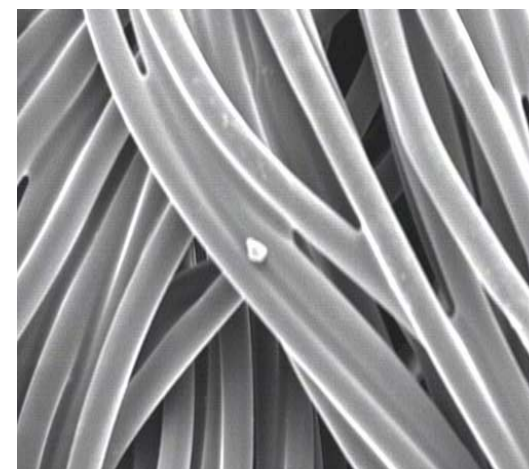
Therapeutics



Device Coatings



Transdermal Patches



Wound Care (\$6 B by 2013)¹

- Dressings and sealants (\$3 Billion)
- Closure devices (sutures, etc.) (\$3 Billion)

¹ MedMarket Diligence

Depot Injectibles (Microspheres)

- Arthritis (\$27 B by 2015)²
 - Intra- and peri-articular and intra-bursal delivery to diseased joints in humans
- Sports injuries (20 mm)³
- Animal health (\$19 B in 2010)⁴

²Research and Markets (Espicom Business Intelligence)

³American Sports Data, Inc.

⁴Chemical and Engineering News (ACS)

Regulatory Pathway

For Pharmaceutical product:

- **Modifications to approved drugs under 505(b)(2) which provides for:**
 - **Faster approval path and reduced development costs relative to an NCE**
 - **Patent exclusivity 3-5 years and listing in FDA's Orange Book**
 - **More clearly defined development timeline**
 - **Reduced risk with regards to pharmacodynamics of the drug as compared to an NCE**
 - **Conversion from generic to branded drug**

For Wound Care product:

- **Utilization of an OTC drug (e.g. salicylic acid) for wound care will be developed as a 510(k) application**
 - **Shorter approval path**
 - **Reduced development costs relative to an Rx based wound care product**
 - **Clearly defined development schedule**

Milestones Achieved

Seed Money Secured

- POC demonstrated:
 - Coronary stent coating.
 - Coated ePTFE vascular grafts.
 - Mesh coatings.
 - Subcutaneous injection.
- PolyNSAID polymers passed ISO 10993 tests for cytotoxicity and pyrogenicity.

Future Milestones

Product Development

- Polymer synthesis
- *In vitro* elution studies
- Scale up synthesis efforts
- Initiate *In vivo* studies

Corporate Goals

- Raise Capital
 - Year 1 - \$1 million
 - Year 2 - \$2 million
- Complete 1st strategic deal
- Determine lead product and target market

•Seeking partners from pharmaceutical and medical device companies to support clinical development and commercialization in the following areas:

- PolyNSAID coatings for devices: Wound closures (sutures, staples)**
- Anti-inflammatory coating of woven mesh: Surgical mesh (hernia repair)**
- Depot injectibles:**
 - Osteo-/rheumatoid arthritis**
 - Animal health**

Intellectual Property

Wide range of
polymer
chemistries

Wide range
of linker
molecules

Broad
composition
claims

Broad
method
claims

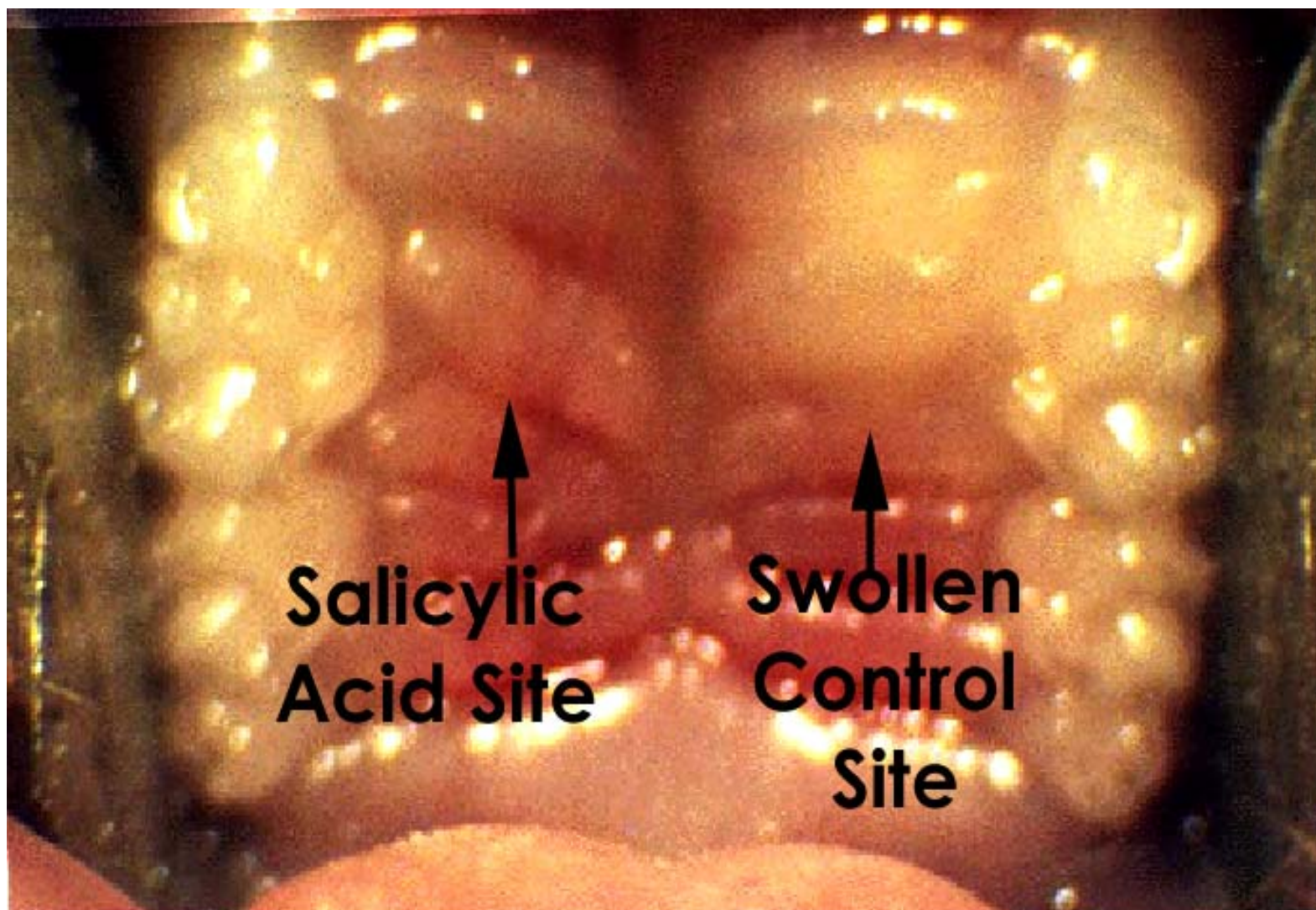


STRONG BLOCKING INTELLECTUAL PROPERTY



- **8 US patents issued & allowed**
- **19 provisional or pending applications**
- **Key claims:**
 - **All polyanhydrides comprising repeating units of drug molecule and a carbon chain linker**
 - **Provisional patents pending cover a variety of non-polyanhydride chemistries and linkers**

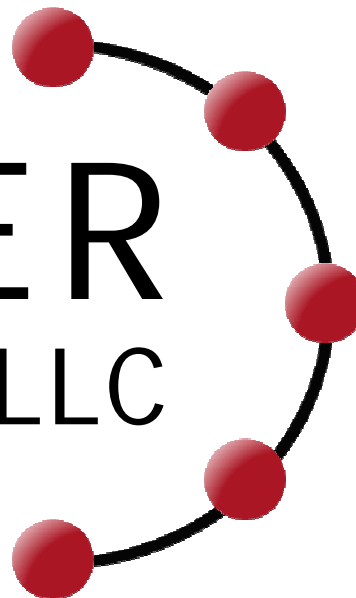
Preclinical Proof of Concept



Summary

- **Seasoned management team with domain expertise**
- **Unique value proposition compared to existing market players**
- **Broad product development platform**
- **Large addressable markets**
- **Proof of concept demonstrated**
- **Strong blocking patents**

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