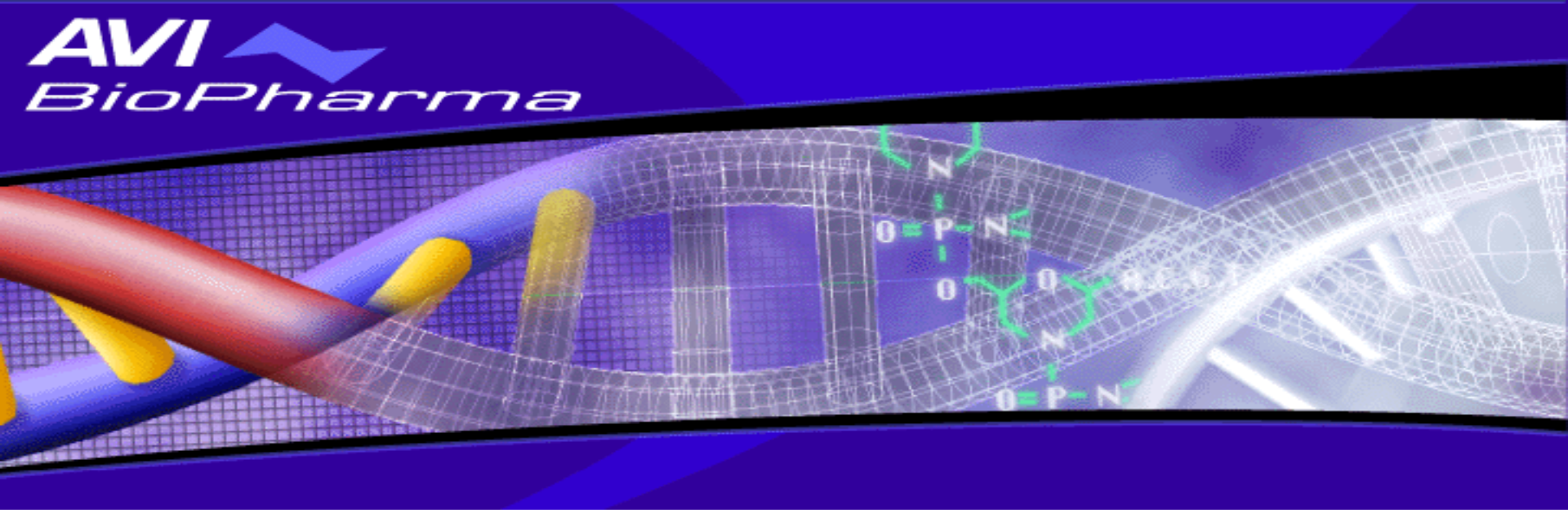
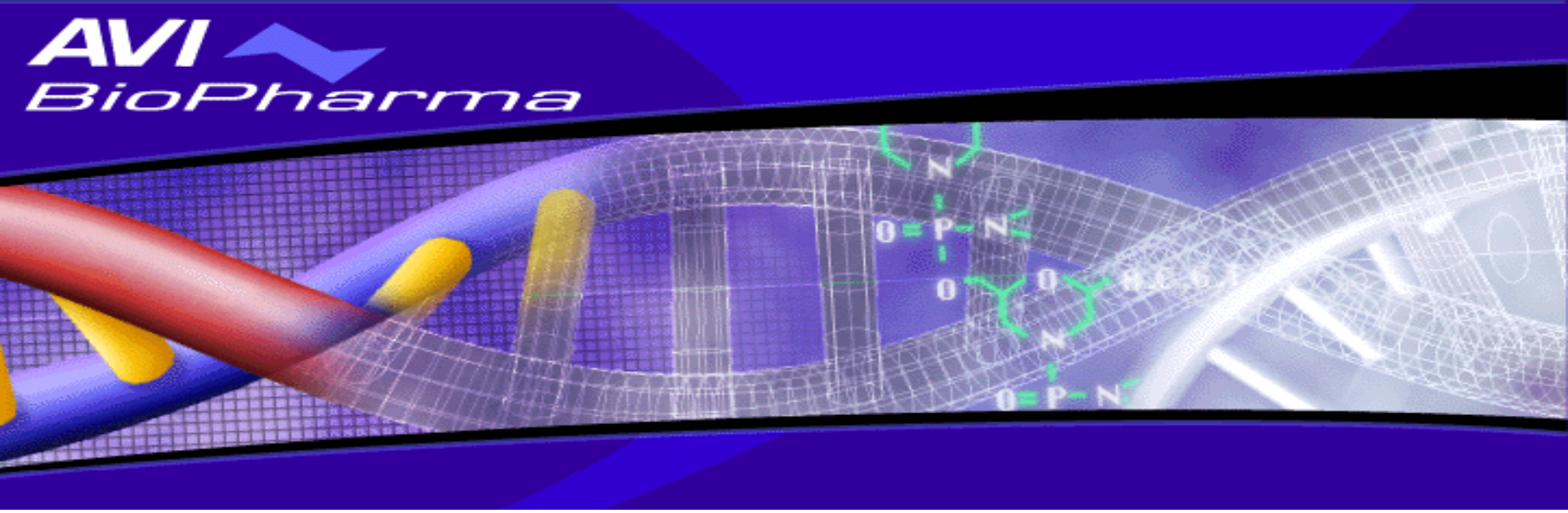


Dr. Leslie Hudson

President and CEO
AVI BioPharma

UBS Investor Conference

September 25, 2008



Transitioning an Antisense Pioneer into a Leading RNA-based Drug Discovery and Development Company

New Investment Thesis

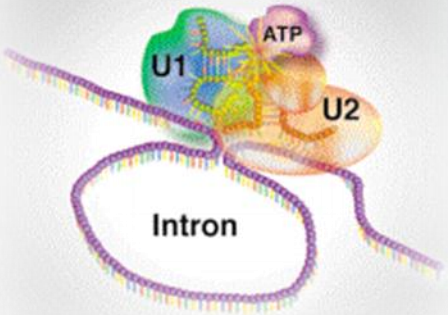
- Focused R & D Programs On High Potential Therapeutic Targets
- Leveraging Newly Developed and Newly Acquired Applications and Technologies
- Gate-Keeper Intellectual Property Estate
- Re-started Active Partnering and Out-licensing
- New Management Team in Formation

AVI Near Term Catalyst Opportunities

- Duchenne muscular dystrophy
  - Significant, near term BD opportunity for new franchise
- Cardiovascular restenosis
  - Partnered to Cook Medical for double digit royalty
- Ebola, Marburg and Dengue Viruses
  - IND-based contracts
  - BioDefense BD partnering
- Expand Viral Program
  - Opportunity to re-enter HCV with a strategic partner

RNA-based Therapeutics

Pre-mRNA

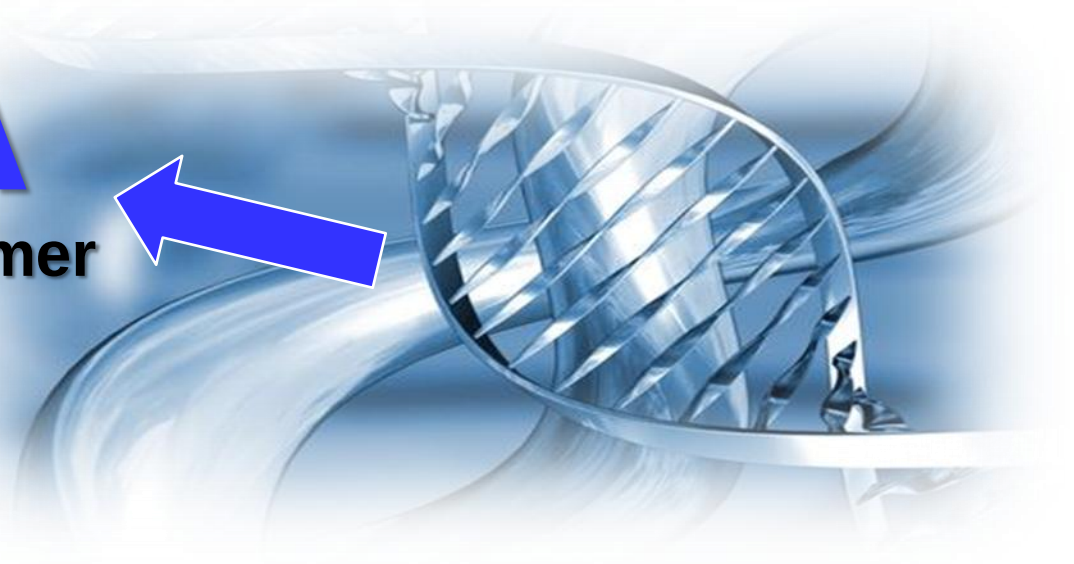


mRNA

Protein Expression

AVI BioPharma

RNA-based Therapeutics



Pre-mRNA

Splice-Switching Oligomer

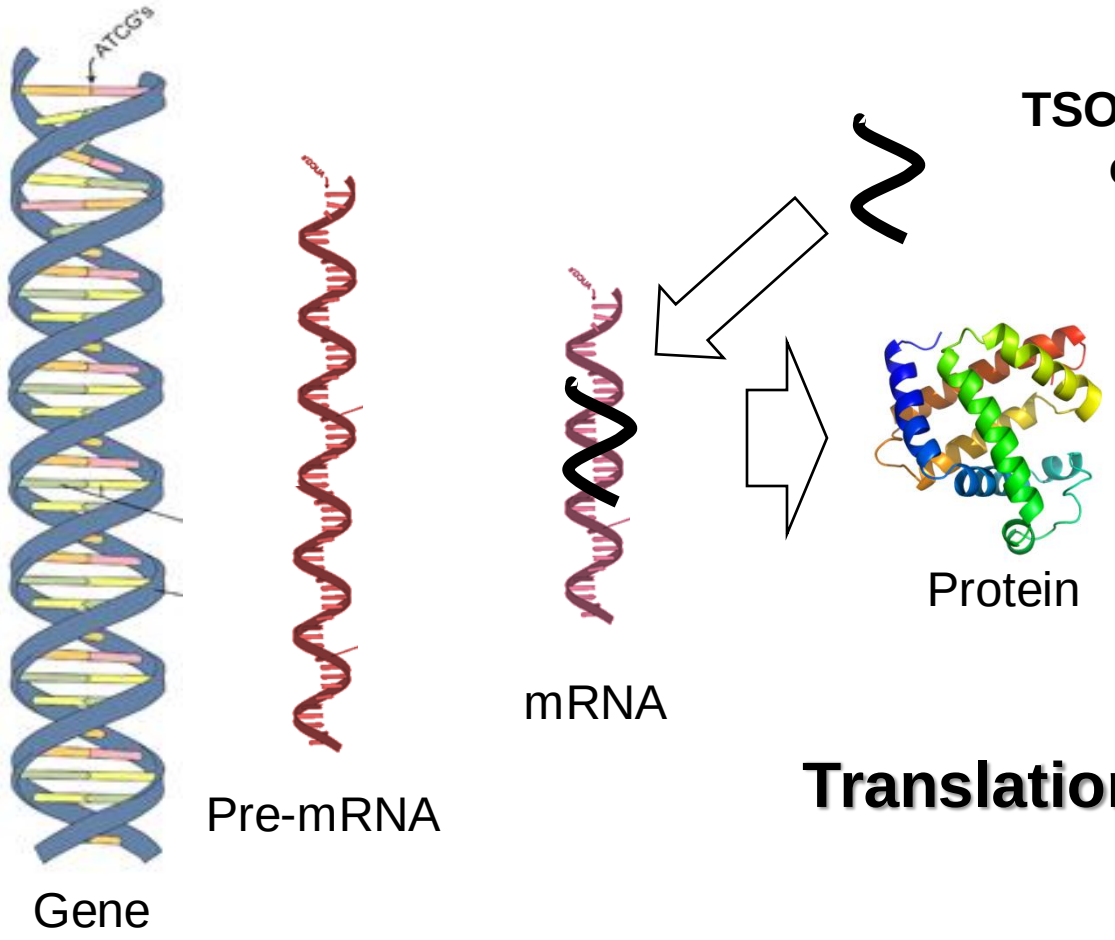
(SSO)

mRNA

Translation-Supressing Oligomer

(TSO)

RNA-based Therapeutics – RNA Blockade



Translation-Supressing Oligomer (TSO)

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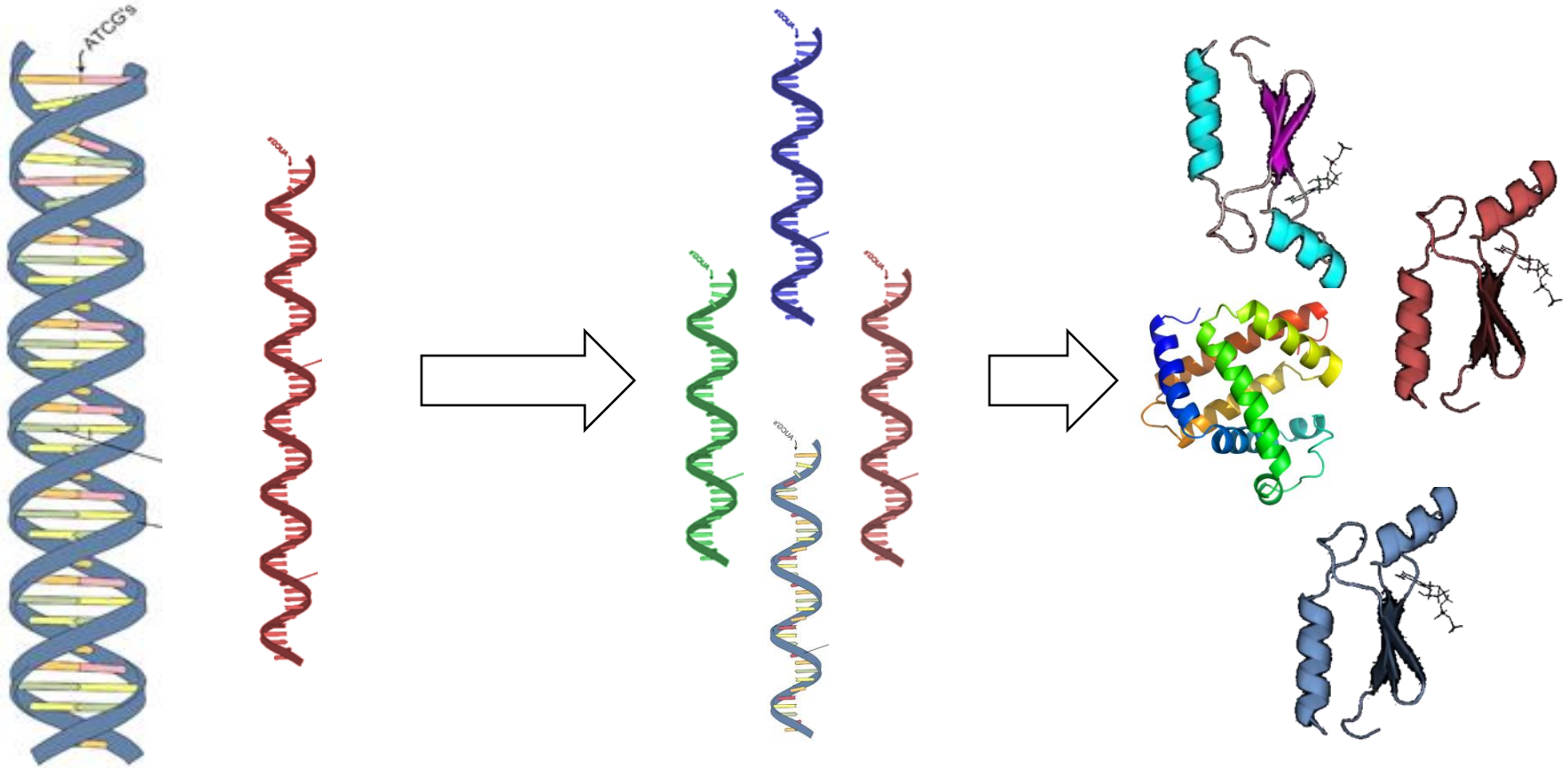
One Gene - Several Proteins - Splicing



Gene Pre-mRNA mRNAs Proteins

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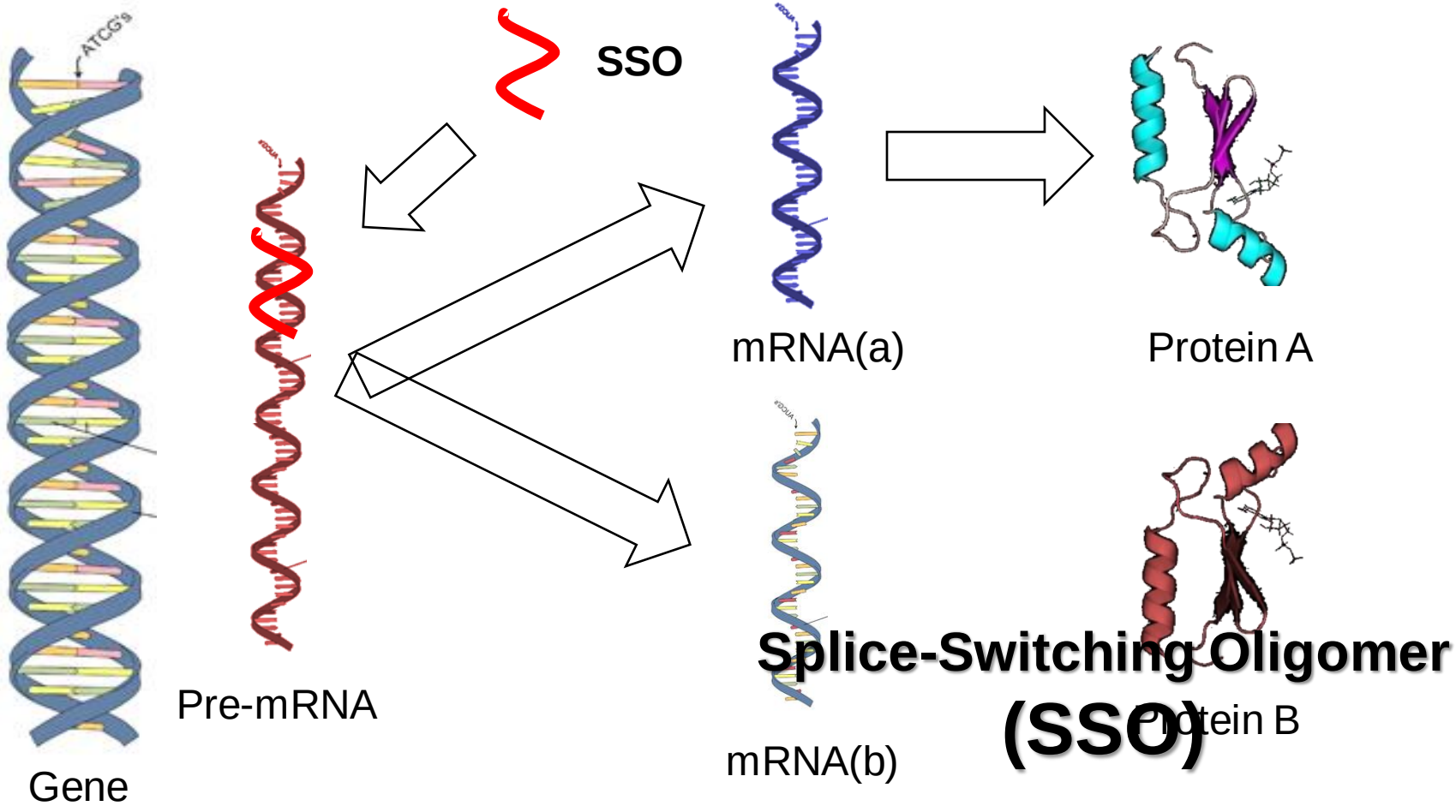
RNA-based Therapeutics – Splice Switching



RNA-based Therapeutics

Can up- and down-regulate pre-mRNA and mRNA

SSO and TSO

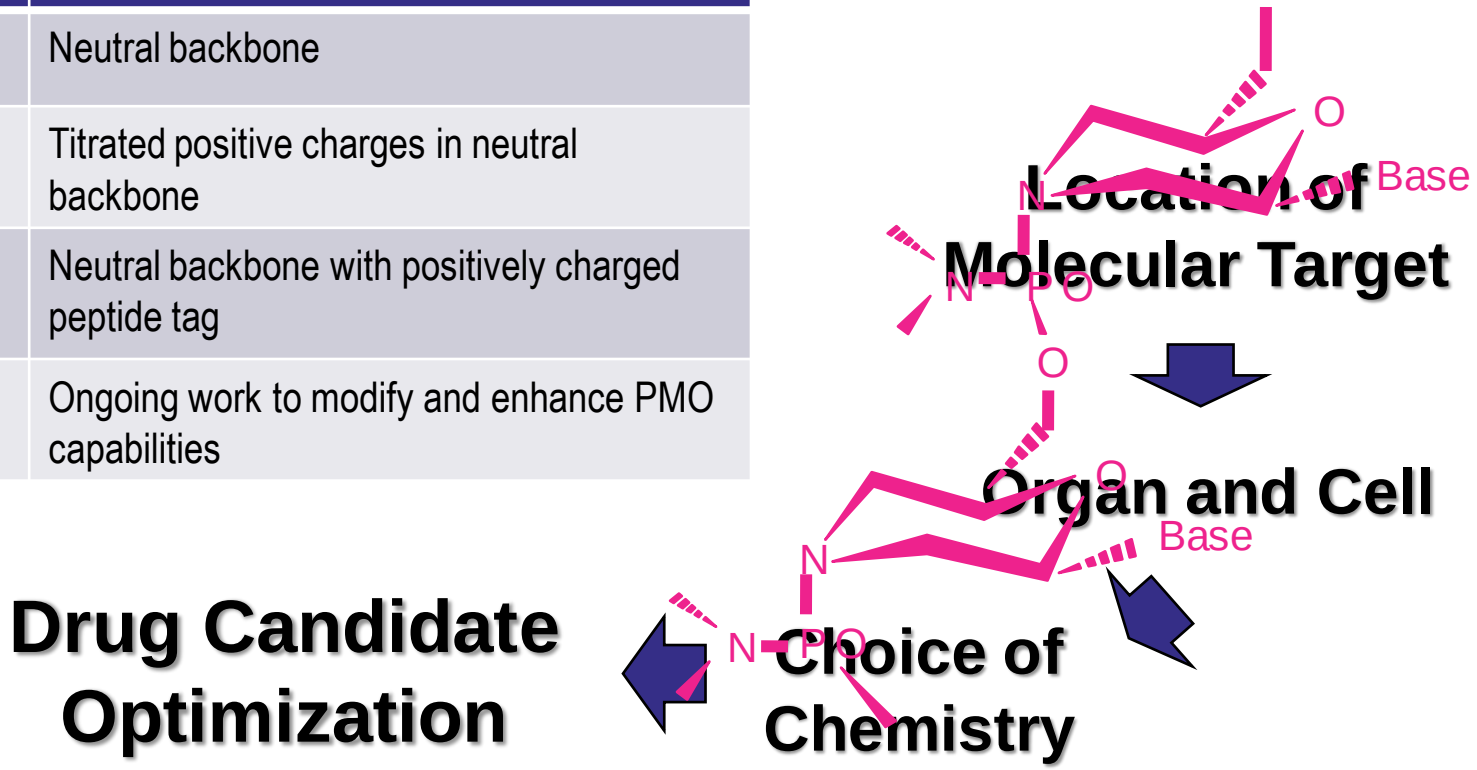
Pre-mRNA **mRNA**

siRNA down regulates mRNA only

mRNA

Expanded Therapeutic Target Opportunities via Additions to Core Chemistry Portfolio and IP

Chemistry	Chemical Character
PMO	Neutral backbone
PMO+	Titrated positive charges in neutral backbone
PPMO	Neutral backbone with positively charged peptide tag
PMO-X	Ongoing work to modify and enhance PMO capabilities



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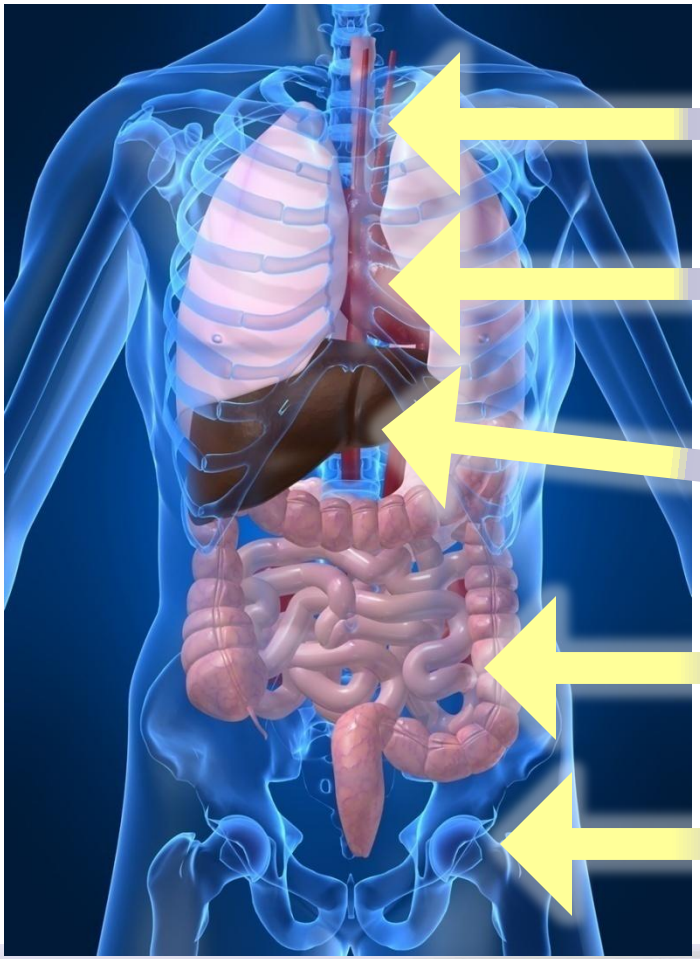
Organ Location of Therapeutic Target Dictates Choice of Chemistry



Lymphoid cells – PPMO – IL-10

Heart muscle & diaphragm – PMO & PPMO - DMD

Liver – LNA – TNF Receptor in RA

Liver & kidney– PMO+ - viral infections

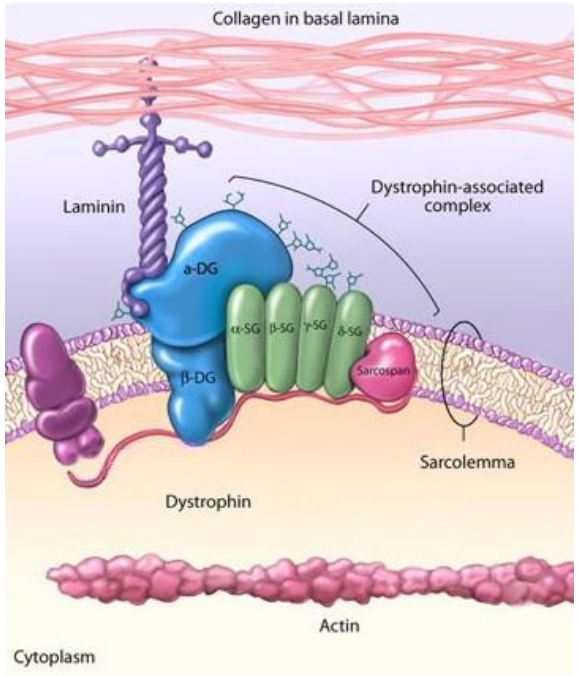
Skeletal muscle – PMO & PPMO - DMD

CURRENT DEVELOPMENT PORTFOLIO

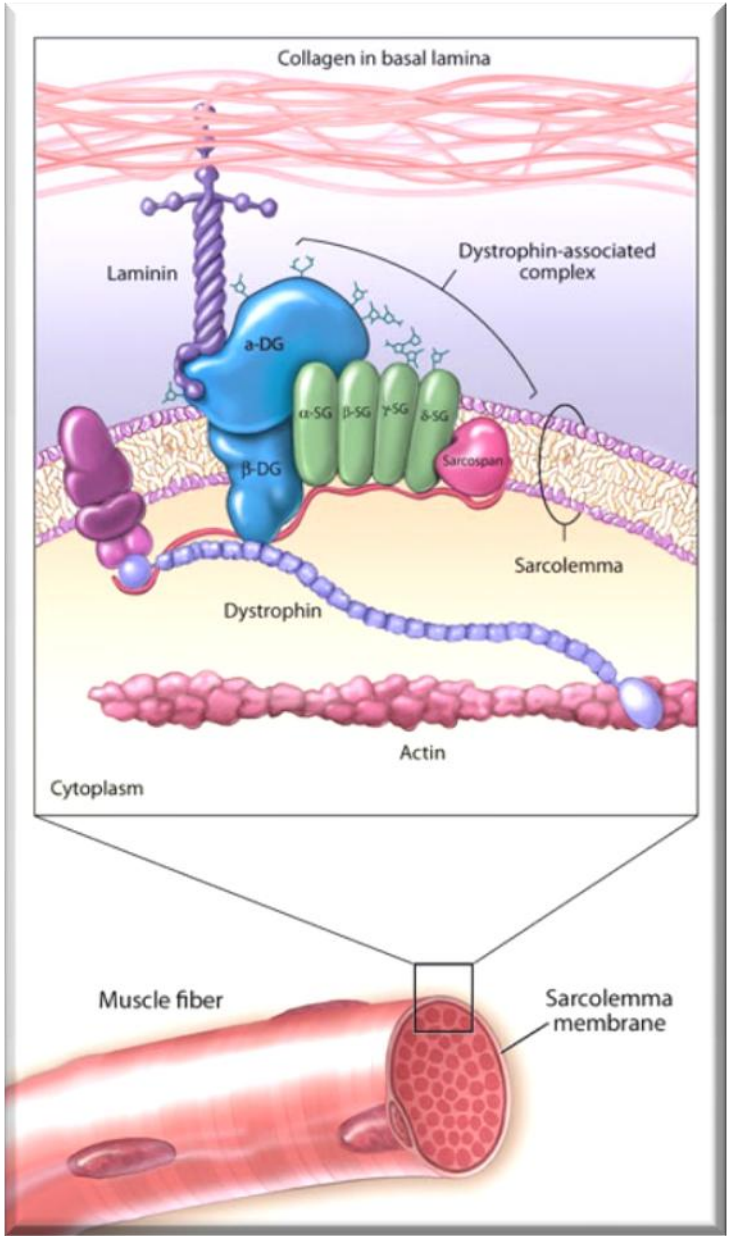
Duchenne Muscular Dystrophy (DMD)

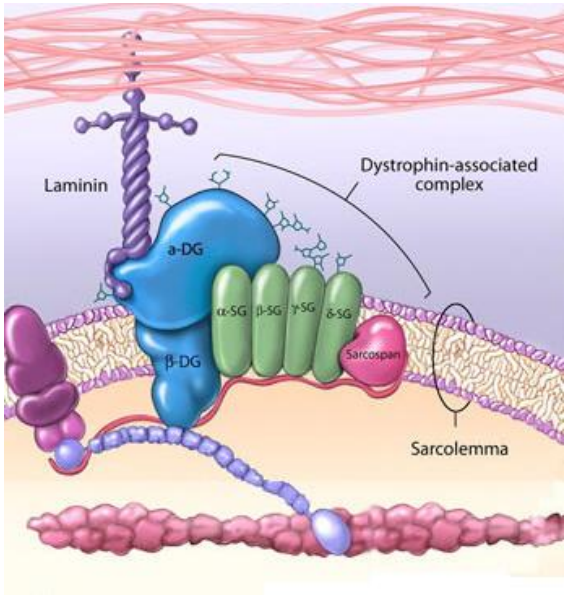
- Defects in the dystrophin gene; no protein expression
  - X-linked recessive
  - Mutational hot spot: exons 45 and 55: *functionally silent* region
  - 1 in 3 cases arise by spontaneous mutation; limits control via genetic counseling
- Symptoms present at 3-5 years of age
  - Muscle degeneration overwhelms regenerative capacity
  - Patients restricted to wheelchair by age 12
  - Death from cardiac respiratory complications
- Effects 1 in 3,500 male births; High yearly cost of care

Clinical Expectations for Exon Skipping



Duchenne muscular dystrophy





Becker muscular dystrophy

AVI's DMD Exon Skipping Strategy

- Clinical trials for exon 51 (17.5% of cases)
  - IM dose escalation on-going in EU
  - CTA for systemic trial approved by MHRA in EU
  - Preclinical pathway in US negotiated with the FDA
- PMO drug candidate: AVI-4658
- First generation: 6 single-exon drugs

DMD – Therapeutic Exon Skipping

Exon to Skip	Therapeutic for Deletions (exons)	% in Leiden Database
51	45–50, 47–50, 48–50, 49–50, 50, 52, 52–63	17.5
45	12–44, 18–44, 44, 46–47, 46–48, 46–49, 46–51, 46–53, 46–55	11.2
44	14–43, 19–43, 30–43, 35–43, 36–43, 40–43, 42–43, 45, 45–54	7.8
53	10–52, 45–52, 46–52, 47–52, 48–52, 49–52, 50–52, 52	7.5
46	21–45, 45, 47–54, 47–56	5.6
50	51, 51–53, 51–55	5.2
	Total top six skipped exons	54.8%

Source: van Deutekom & Ommen, Nature Reviews Genetics **4**, 774, 2003

AVI-4658 Pre-clinical Efficacy: Two Species

- Single treatment in mdx mouse model of DMD leads to 10-100% dystrophin production; HE dose 2.5 to 8.3 mg/kg
- Results in sustained functional improvement
  - Reduced serum CK and improved muscle force measurements
- Serial injections have cumulative effect on expression and clinical benefit
- Serial IV administration of PMOs at 20 mg/kg (exons 5, 6 and 7) in canine DMD model leads to significant functional improvement

Exon Skipping “Proof of Concept” Performed by Collaborators in Dystrophic Canine Model

Courtesy of Toshifumi Yokota, Shin'ichi Takeda, National Institute of Neuroscience, Tokyo, Japan and Eric Hoffman, Children's National Medical Center, Washington DC

Equivalent clinical assessment scales

Near Term Milestones in DMD Program

		Event
2008	Q4	• Exon 51 IM AVI-4658 Study completed • Exon 51 IV AVI-4658 First patient dosed • Exon 23 AVI-4225 Mechanistic toxicology study in *mdx* mouse
2009	Q1	Note Filing of IND for exon 50 study in US will await completion of *mdx* mouse toxicology study
	Q2	• Exon 51 IV AVI-4658 Data on third cohort of patients • Exon 23 AVI-4225 Mechanistic toxicology study in *mdx* mouse study completed

DMD: *SuperNiche* Specialty Pharma

- Incidence
  - 1 per 3,500 male births
  - 600 new cases each year in US
  - 700 new cases each year in EU
- Prevalence
  - 12,500 patients US
  - 14,000 patients EU
- 65% patients amenable to exon-skipping therapy
- Annual cost of care $4-500,000 per non-ambulatory patient

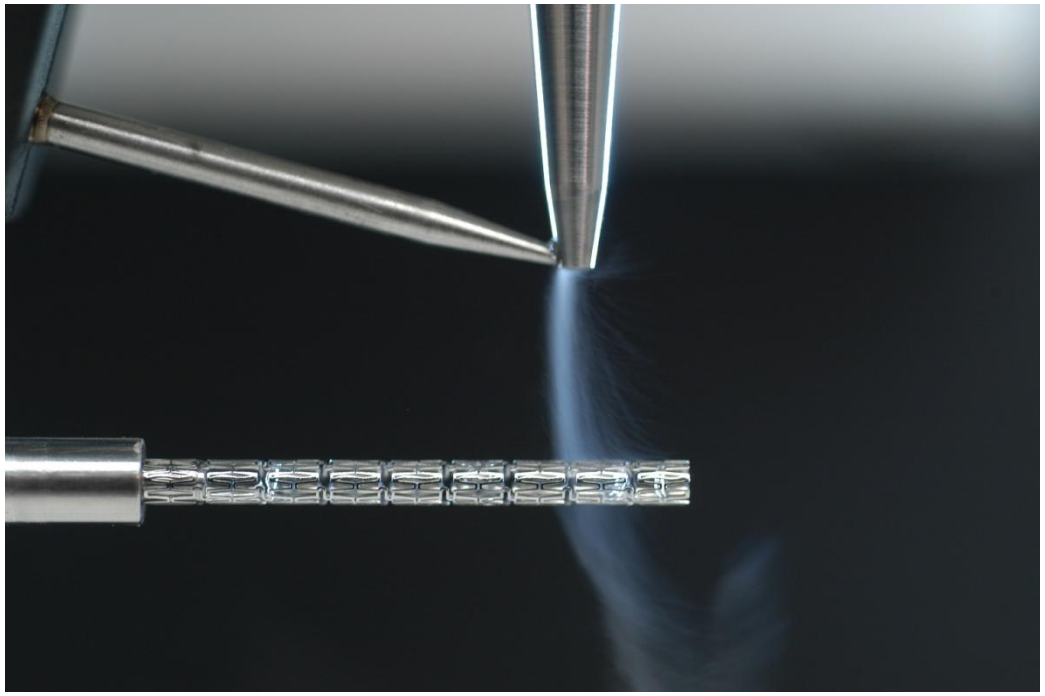
Precedent for Pricing to Value in Fatal / Debilitating Diseases

Drug	Company	Indication	Annual Price
Vectibix	Amgen	Colon cancer	$100,000
Kuvan	BioMarin	Phenylketonuria	$76,000
Cerezyme	Genzyme	Gaucher disease	$200,000
Fabrazyme	Genzyme	Fabry disease	$180,000
Myozyme	Genzyme	Pompe disease	$250,000
Erbitux	ImClone	Colon, head and neck cancers	$120,000
Elaprase	Shire	Hunter syndrome	$300,000

DMD Market Opportunity

- Sales Potential for Exon-Skipping Drugs:
  - Number of patients in US and EU: 26,500
  - % amenable to exon-skipping therapy: 65%
  - Potential range of revenue per year per eligible patient: $100,000 - $200,000
- US & EU potential market for exon-skipping DMD drugs is $1.5 - 3.0 billion
- Key clinical criteria for market estimates have yet to be established - size of true amenable population, optimal time to begin treating, treatment duration, etc.

Cardiovascular Restenosis Program



AVI-5126 is a PPMO against *c-myc;* partnered to Cook Global Therapeutics for use on a new drug-eluting stent

The Drug Eluting Stent Market

- Current market at $5B
- US DES market ~$4B
  - 6 DES products on market by 2009 (Cypher, Taxus, Endeavor, Zomaxx, Promus, Liberte)
- OUS market has more than 20 DES

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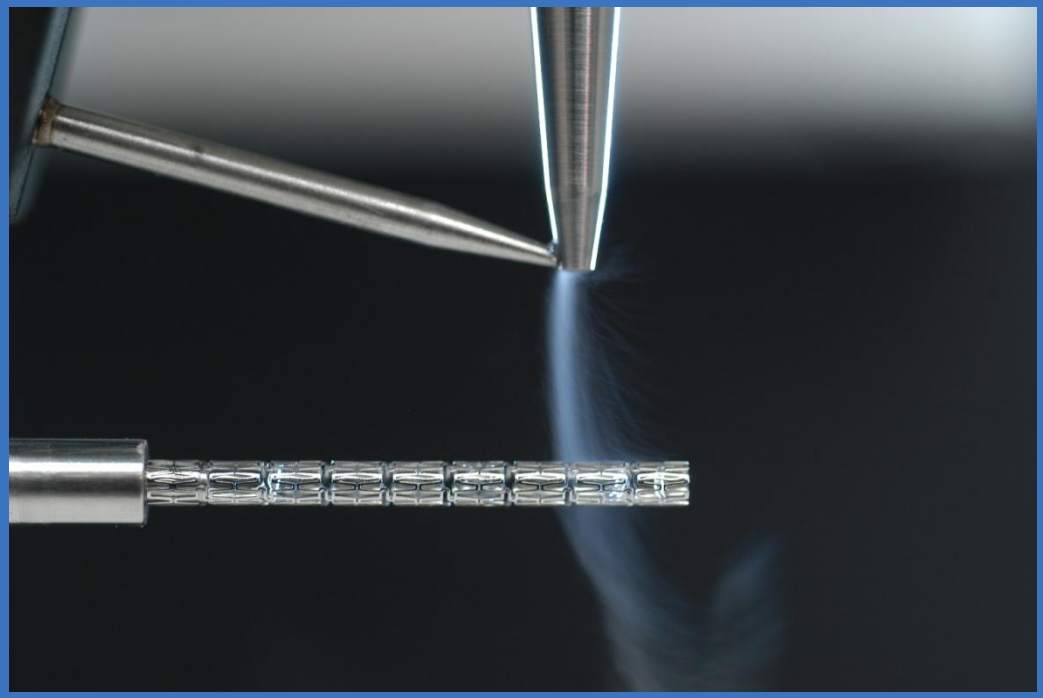
Global Therapeutics Silencer™ System



- Rapid release of drug
- Equivalent to bare metal stent after 2 hours once implanted

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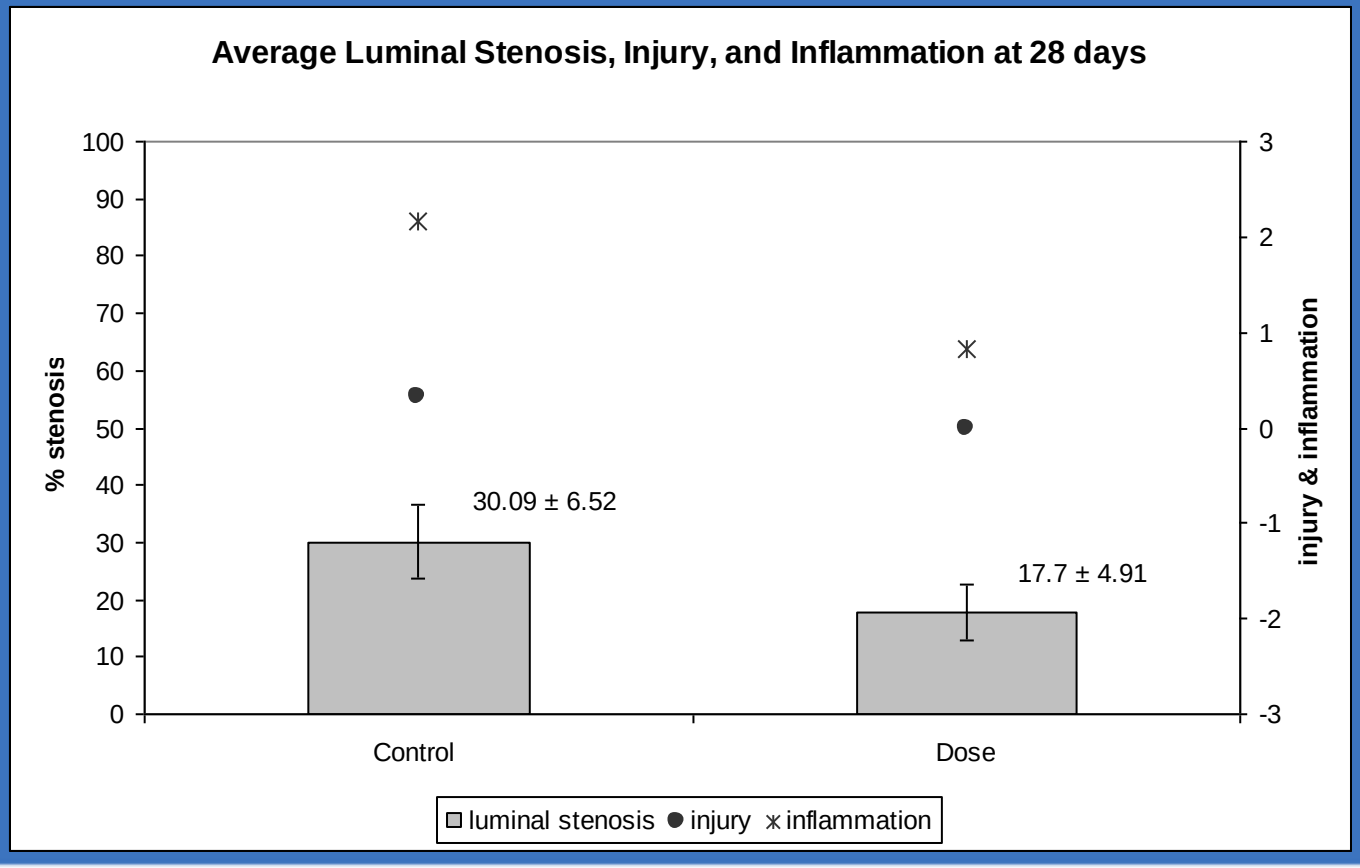
Preclinical Results



Unpublished, Global Therapeutics, LLC

Clinical Plans

- SMART I Study
  - 50 patients
  - Discrete, de novo lesions
  - 6 month QCA and IVUS follow-up
  - Multi-centered
  - Q4 2008

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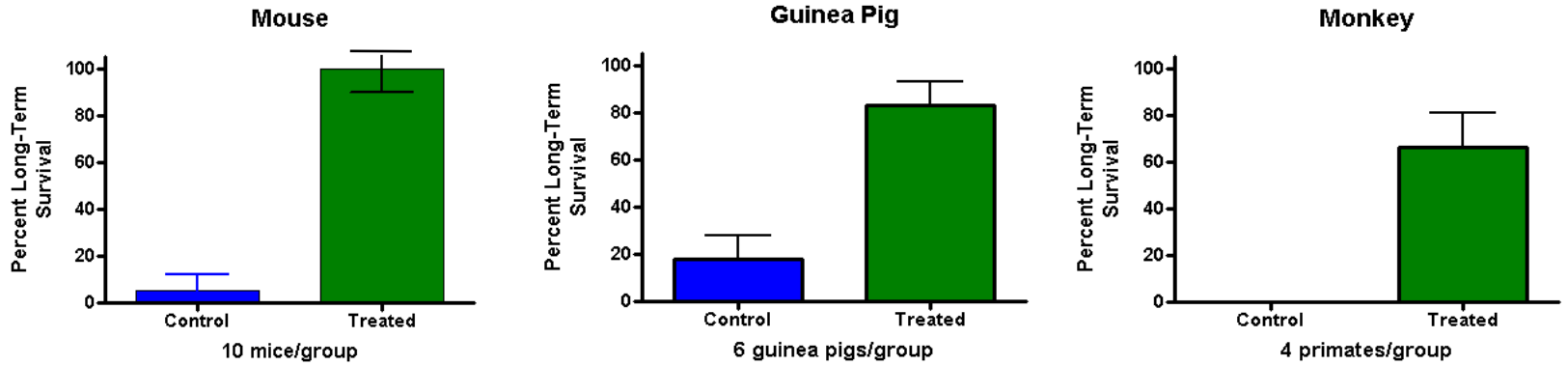
Ebola and Marburg Viruses

Human infections:

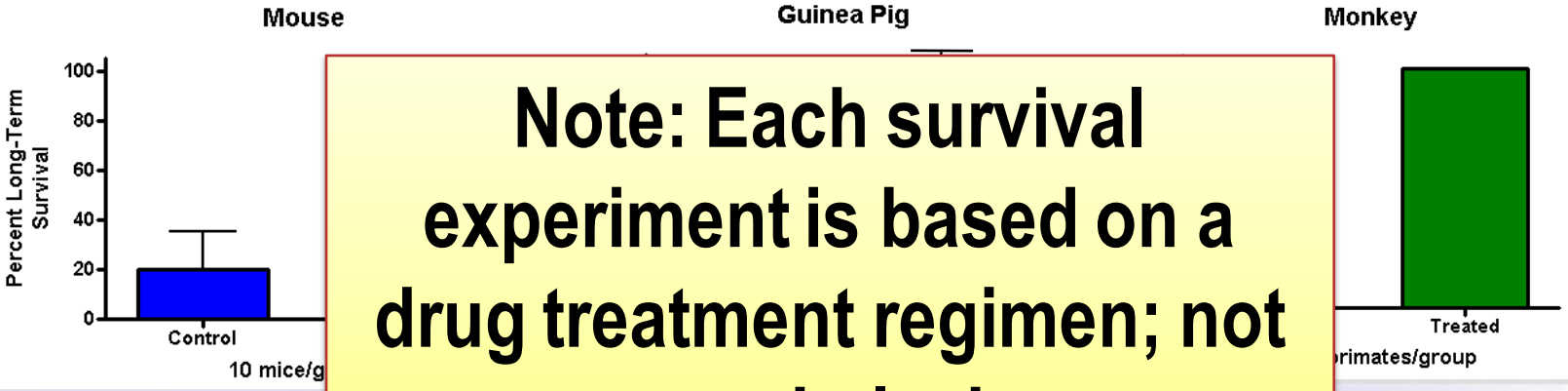
- ~85% cases are lethal
- To date no therapeutic agents
- Major priority for Bioshield
- Ebola and Marburg are single-stranded(-) sense RNA viruses

Unparalleled Survival Data for Two Viruses in Three Preclinical Models

AVI-6002 Ebola Survival Observations



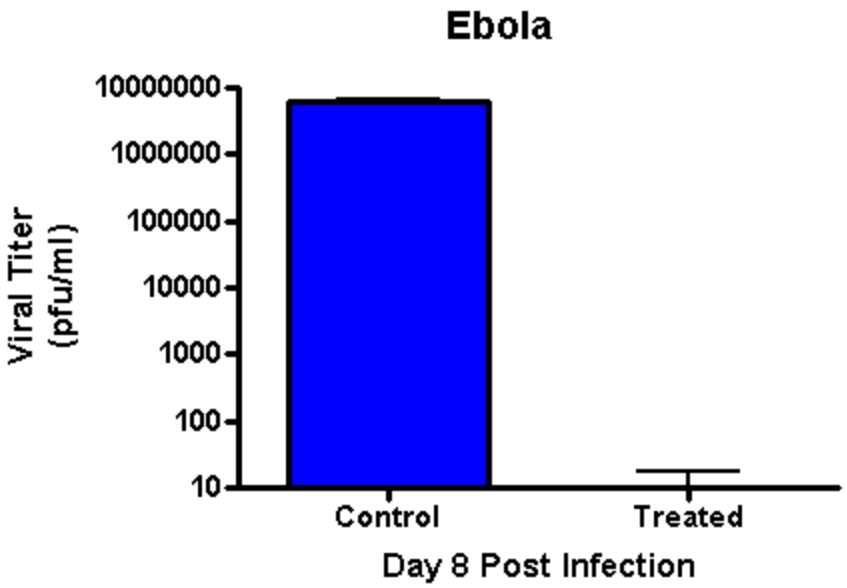
AVI-6003 Marburg Survival Observations



Note: Each survival experiment is based on a drug treatment regimen; not prophylaxis

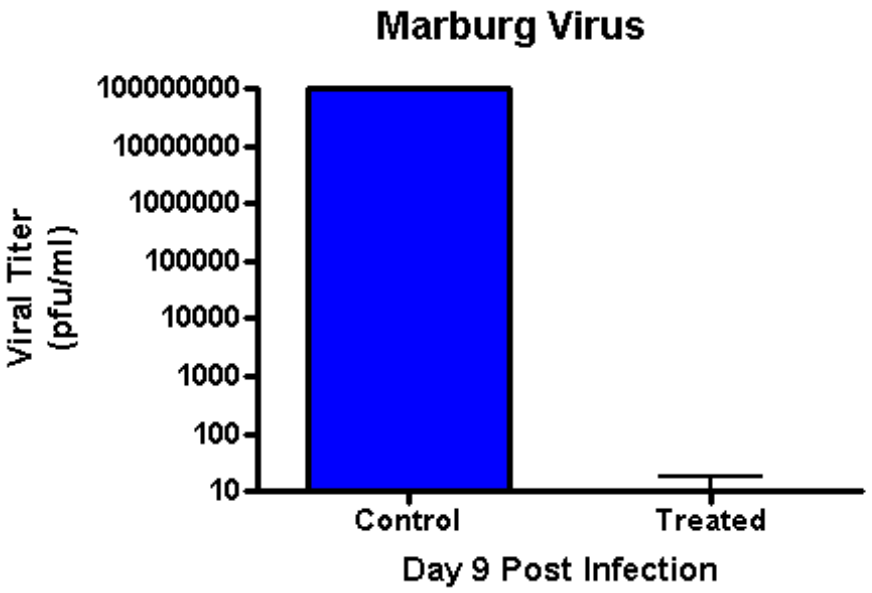
Impressive Reduction in Viremia in Monkey Models of Ebola and Marburg

Greater than 5-log reduction in Ebola viremia



Virus no longer detected beyond day 10

Greater than 7-log reduction in Marburg viremia



Virus no longer detected beyond day 14

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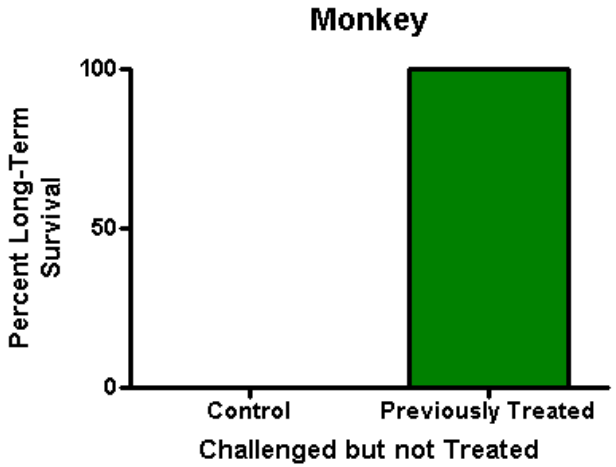
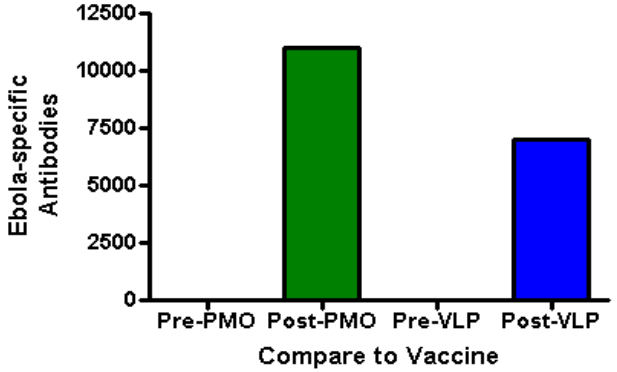
Ebola Re-Challenge Studies

- Monkey re-challenge
  - Monkeys challenged **and** treated then re-challenged **but not** re-treated
  - 100% long term survival
- Mouse re-challenge
  - 100 percent survival
  - Enhanced antibody response
  - Cell mediated immune response increased 20 fold

Survival



Antibody Response



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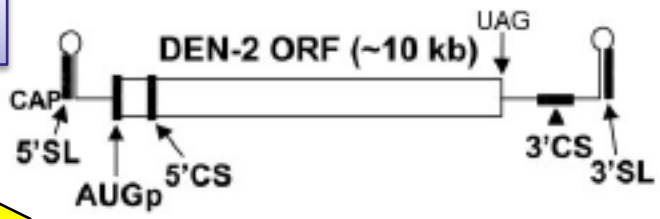
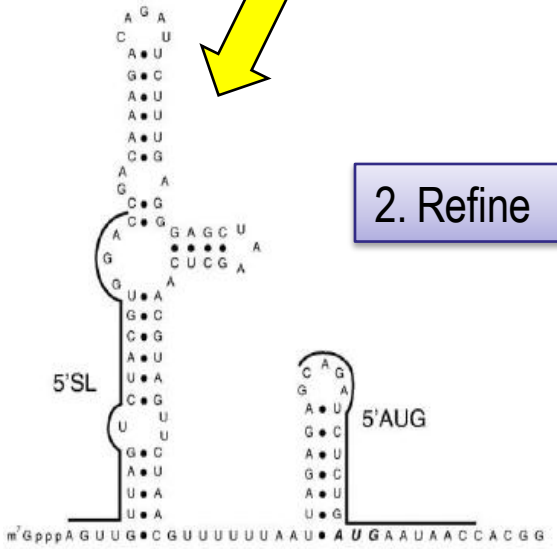
Dengue Virus

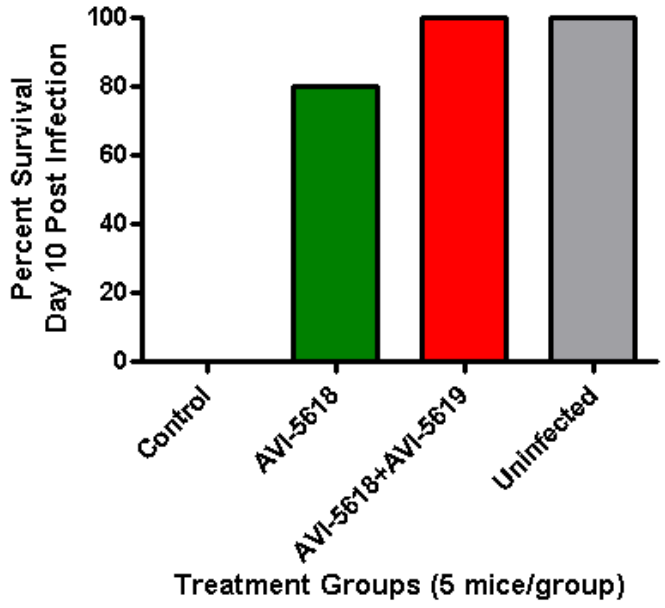
1. Screen



2. Refine



3. Explore Combinations



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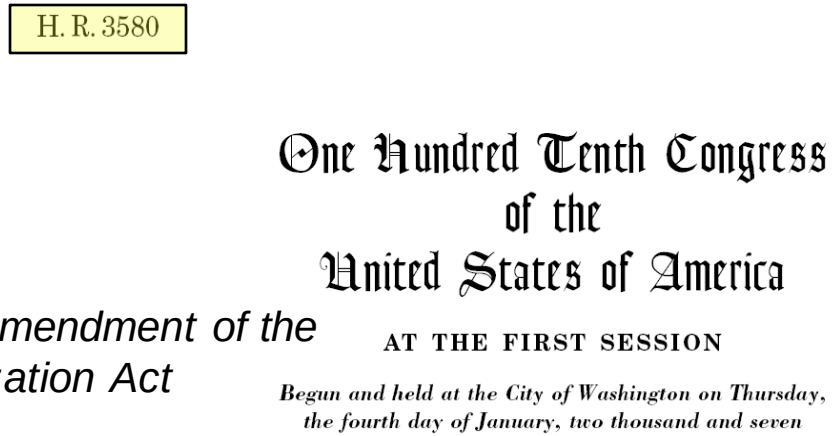
Priority Review Voucher


H. R. 3580

One Hundred Tenth Congress
of the
United States of America

AT THE FIRST SESSION

Begun and held at the City of Washington on Thursday, the fourth day of January, two thousand and seven

- Signed into law on September 27, 2007
  "mere tweak to the existing rules"
- Sen. Brownback incorporated into the:
  Neglected Disease amendment of the FDA Revitalization Act
  co-sponsors: Sens. S. Brown and J. Lieberman

1. Approval of qualifying drug - neglected diseases, e.g., Dengue (named in act), Ebola, Marburg (within scope of the act)
2. FDA grants voucher
3. Voucher can be sold, traded or used
4. Reduce time to market by up to 6-12 months
5. Could be worth approximately $300 million by speeding development and commercialization of another major drug

Development Milestones in 2008

		Event
2008	Q1	• AVI-6003 (Marburg Musoke) – pre-IND filed • AVI-4658 IV (DMD) – CTA filed for a systemic study • AVI-6002 (Ebola Zaire) – pre-IND filed
	Q2	• AVI-4658 (DMD) European Orphan Drug request filed • PMO-based exon 50 product (DMD) – pre-IND filed
	Q3	• Response to FDA pre-IND comments for: – PMO-based exon 51 product in USA – Ebola and Marburg
	Q4	• Exon 51 IM AVI-4658 Study completed • Exon 51 IV AVI-4658 First patient dosed • Exon 23 AVI-4225 Mechanistic toxicology study in *mdx* mouse • Start of restenosis clinical trial in EU by Cook Global Therapeutics • AVI-6003 (Marburg Musoke) – IND to be filed • AVI-6002 (Ebola Zaire) – IND to be filed

Intellectual Property Overview

Chemistry IP

- PMO patents
- PPMO appls.
- AVI-4658 composition
  Wilton appl.

Biology IP

- ISIS patent excl. license to AVI
- Kole patents
- AVI patent appl.
- Leiden appl.
  US final rejection
  EU pending

Production IP

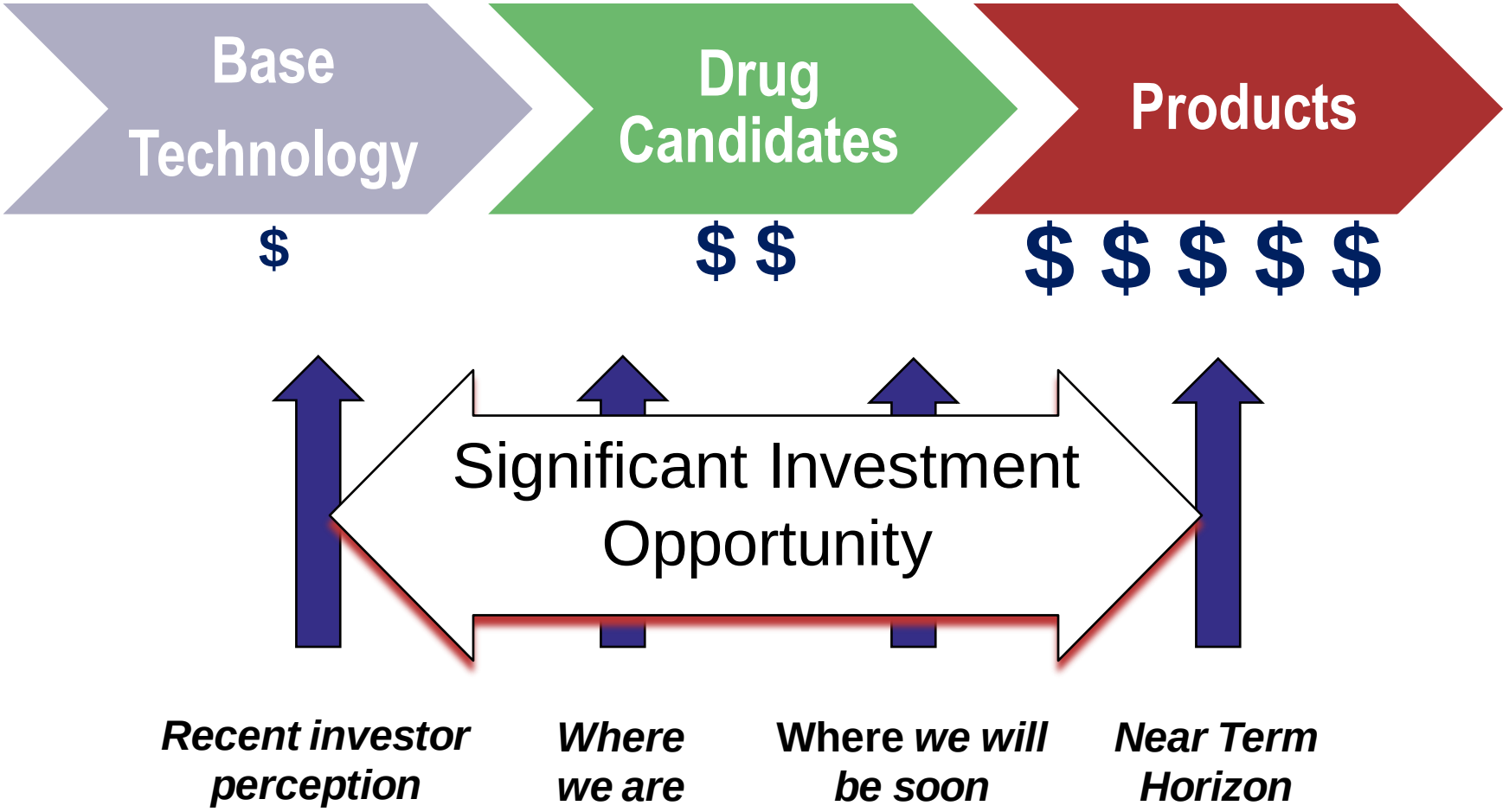
- Improved synthesis apps.
- Trade secrets
- GMP processes
  analytical meth. appl.
  analog bases appls.

- AVI fully enabled to commercialize exon-skipping DMD drugs
- Barriers to competitive entry:
  - issued claims in ISIS patent
  - issued and pending claims in AVI splicing patents

Commercial Product

Orphan Drug Designation
- Granted in U.S.
- Pending in EU

Value Spectrum



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