



## **Therapies for major infectious diseases and related cancers**

**Wholesale Investor – Singapore Capital Expo  
and Small Cap Showcase  
7<sup>th</sup> Nov 2014**

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## Invasive Fungal Infection after Natural Disasters

Kaitlin Benedict and Benjamin J. Park

Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 20, No. 3, March 2014

Dr. Arjun Srinivasan: We've Reached "The End of Antibiotics, Period" **FRONTLINE** October 22, 2013, 9:29 pm ET



Australia Network News

## Calls for action on 'dire' drug-resistant TB threat in Asia and the Pacific

By Jemima Garrett

Posted Mon 14 Apr 2014, 7:05pm AEST

Bulletin of the World Health Organization

Race against time to develop new antibiotics

OXFORD JOURNALS

## Clinical Infectious Diseases

Bad Bugs, No Drugs: No ESKAPE! An Update from the Infectious Diseases Society of America

**THE VERGE**

Gonorrhea is about to become impossible to treat

*Antibiotic resistance means the STD might soon spread more aggressively*

**CBCnews** | Health

Superbug threat as grave as climate change, say scientists

'The international response has been feeble'

Thomson Reuters Posted: May 23, 2014 10:53 AM ET | Last Updated: May 23, 2014 10:53 AM ET



## Increasing resistance

To antibiotics – major concern healthcare systems worldwide



## Hard to treat

Fungal infections, affecting vulnerable patients



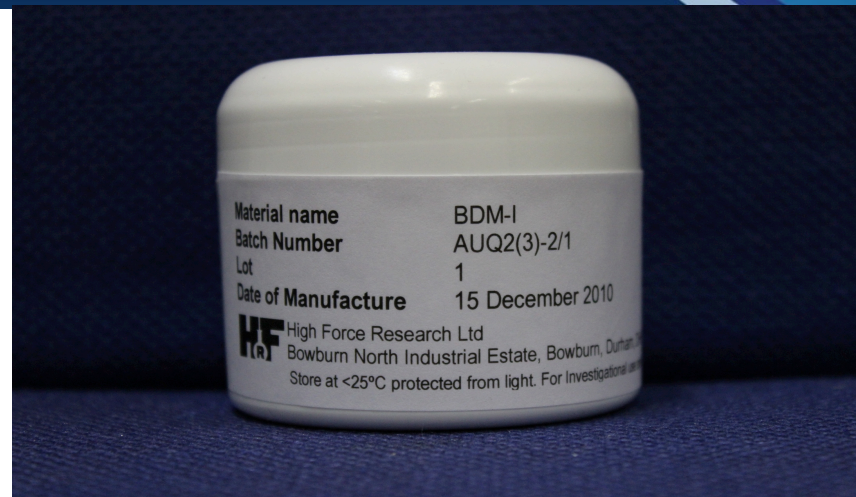
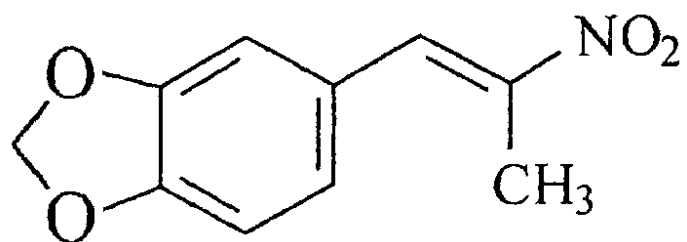
## Increase in prevalence

Due to climate change and vector movements.



## Product pipelines diminish

Large Pharma focus on innovation, as product pipelines diminish



## Novel mechanism of action: Inhibits new target

### Protein Tyrosine Phosphatases (PTPs)

- Involved in cell signalling
- Mimics tyrosine

### Heterogeneity of PTP function explains

- Selectivity within species
- Difference in function in mammalian cells



## Invasive and superficial fungal infections

Some species of

- *Candida*
- *Cryptococcus*
- *Scedosporium*
- *Pneumocystis*

## Drug-resistant tuberculosis & gonorrhoea

- *Mycobacterium tuberculosis*
- *Neisseria gonorrhoea*

## Some protozoal infections

- *Trichomonas vaginalis*; *Plasmodium falciparum*

**and others...**

Group	(µg/ml)	Group	(µg/ml)
<b>Fungi</b>	MIC90 <i>C. glabrata</i> * 1	<b>G-ve bacteria</b>	MIC <i>Neisseria gonorrhoeae</i> 2
	MIC90 <i>C. glabrata</i> ** 2		MIC <i>Campylobacter jejuni</i> 0.5 -2
	MIC90 <i>Coccidioides spp.</i> 0.25*		Other bacteria - potential biological weapons
	MIC90 <i>Coccidioides spp.</i> 0.25**		
	IC50 <i>P. carinii</i> <0.1***	<b>Parasite</b>	<i>Schistosomiasis japonicum</i>
	IC50 <i>P. murina</i> 0.174***		LC50 Adults (5 days) LC50 Schistosomulae (24 hrs)
	MIC <i>Scedosporium prolificans</i> (three strains) 1-2		<i>Schistosomiasis masoni</i> LC50 Adults (5 days) LC50 Schistosomulae (8hrs)

\*50% Inhibition Endpoint

\*\*100% Inhibition Endpoint

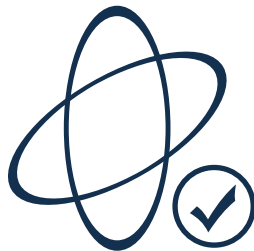
\*\*\* (based on %reduction ATP at Day3)



# Poised for proof-of-concept

Product	Disease Targets	Current Partners	Development Status
BDM-I	Tuberculosis & bioterrorism	US govt backed research institutions	Successful screening result: preparation for <i>in vivo</i> testing
	Pneumocystis	US govt backed research institutions	Successful screening result: preparation for <i>in vivo</i> testing
	Scedosporium	Australian site	Successful screening result: seeking disease models

## Next Steps:



Complete formulation studies



BDM-I testing in animal models

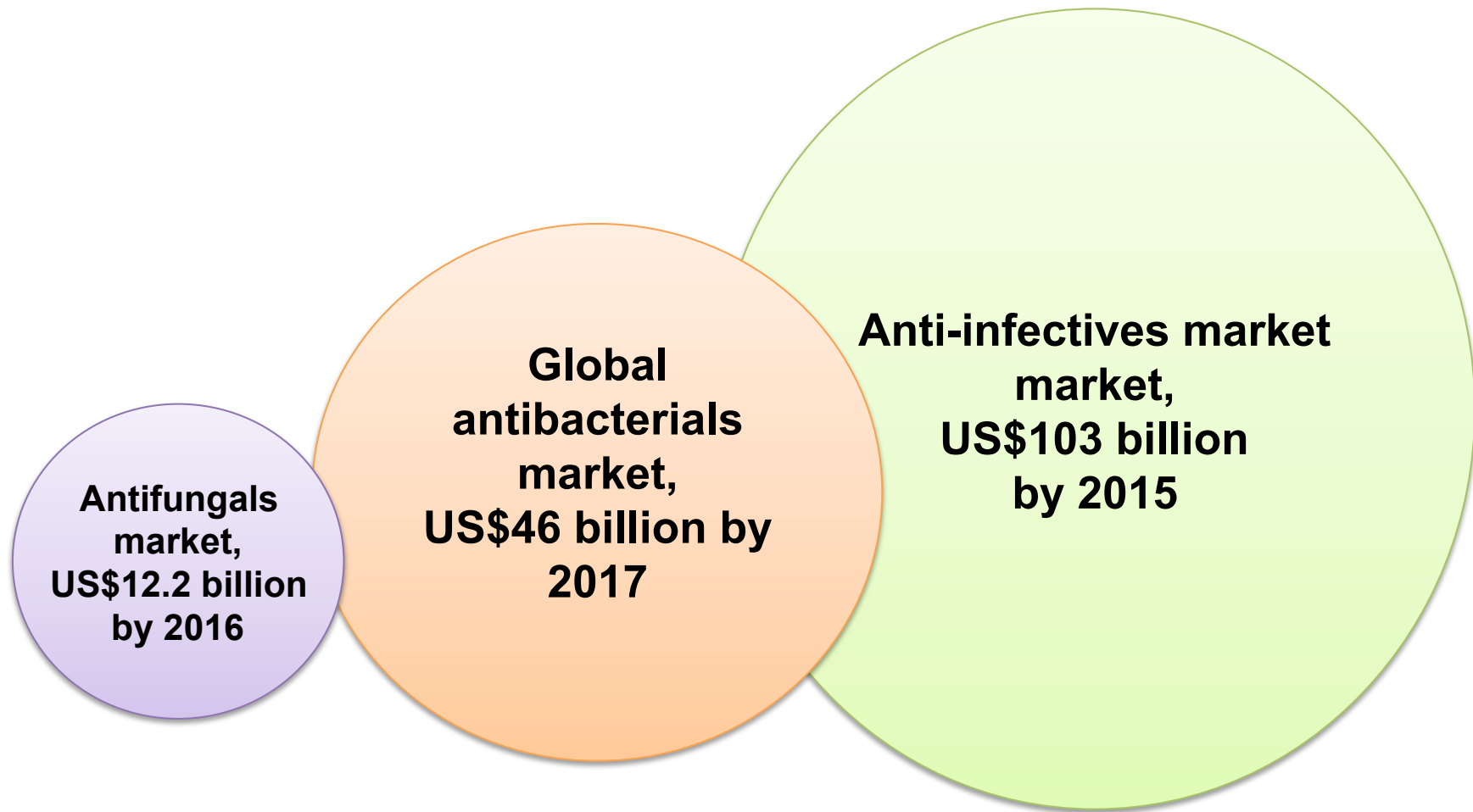


Clinical trial in orphan disease





# Market Size Potential



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# Potential Product Range





# *“Generating Antibiotic Incentives Now”* legislation

## GAIN: How a New Law is Stimulating the Development of Antibiotics

May 28, 2014 | Project: [Antibiotics and Innovation Project](#)

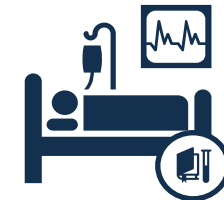
On July 9, 2012, the Generating Antibiotic Incentives Now, or GAIN, provisions were signed into law by President Barack Obama as part of the [Food and Drug Administration Safety and Innovation Act](#). This bipartisan legislation extends by five years the exclusivity period during which certain antibiotics—those that treat serious or life-threatening infections—can be sold without generic competition. This additional period of exclusivity increases the potential for profits from new antibiotics by giving innovative companies more time to recoup their investment costs.

“GAIN seeks to increase antibiotics’  
commercial value....”

🔍 Global problem in infectious disease

🏆 BDM-I has

- Activity vs important pathogens
- Novel mechanism of action; granted patents
- Collaborations in place with world class facilities



👉 Commercial opportunity for product/pipeline development

- Life threatening and other infections
- Attractive incentives e.g. GAIN legislation

👉 **Opportunity for investment & collaboration for development**

- for niche high value diseases and
- expanded product range



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