




DNA chip for screening antibiotic resistance bacteria (Zensoray)

FACULTY OF SCIENCE, MAHIDOL UNIVERSITY

Overview



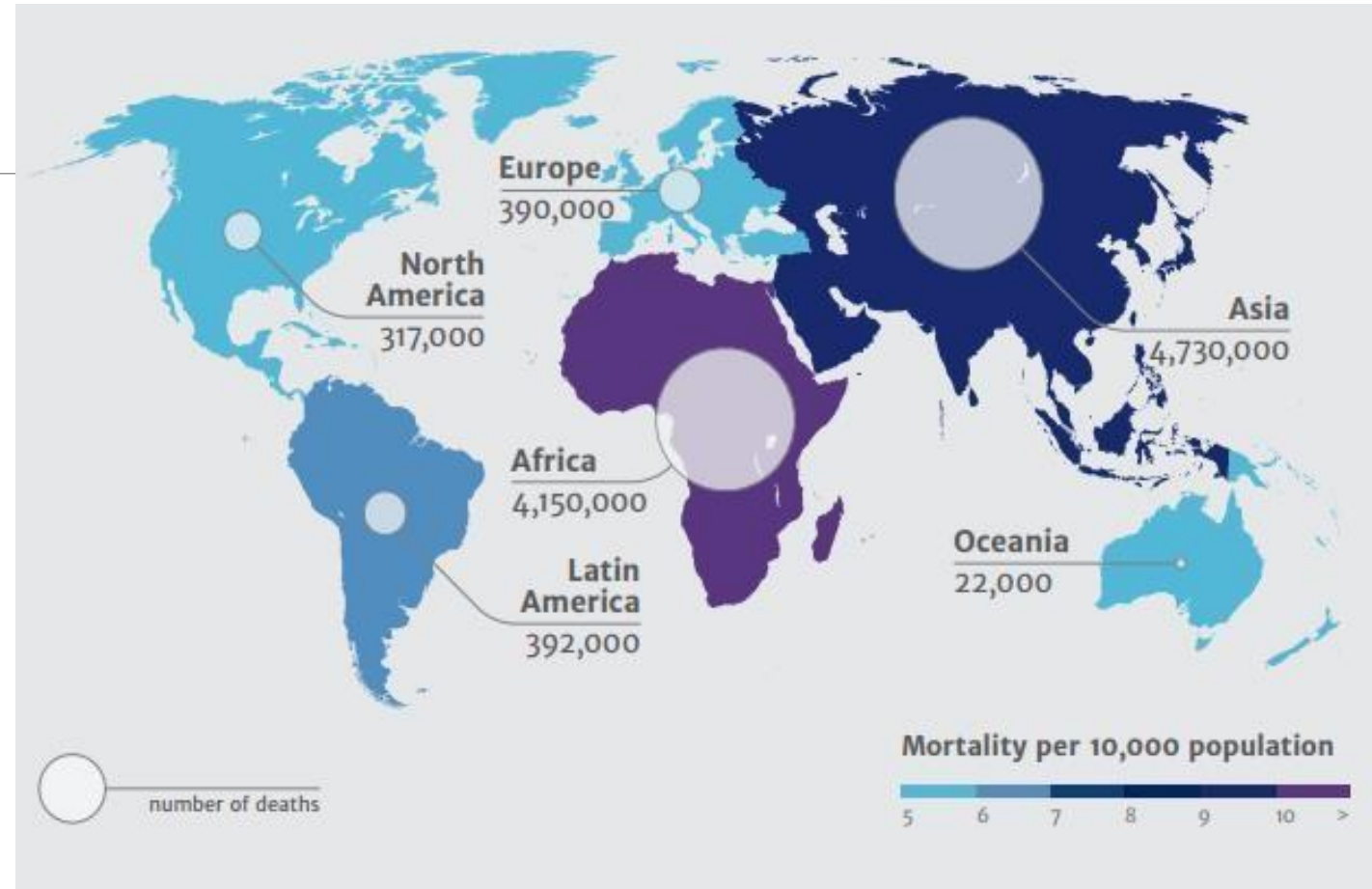
Antimicrobial resistance is a  global problem.

No new major antibiotics have been discovered for 25 years. 

The WHO predicts a post-antibiotic era.

The major reason for resistance development is **inappropriate use** of antimicrobial drugs. 

(WHO, 2016)



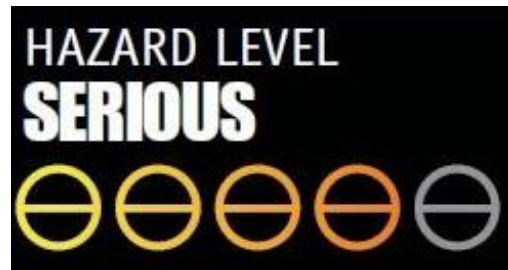
(Sugden et al., Nature microbiol 2016)



Overview : Antibiotic Resistance Threats in Thailand



- Carbapenem-resistant Enterobacteriaceae (CRE)



- MDR Acinetobacter
- MDR *Pseudomonas aeruginosa*
- ESBL
- MDR *Escherichia coli*
- MDR *Klebsiella pneumoniae*
- *Salmonella spp.*

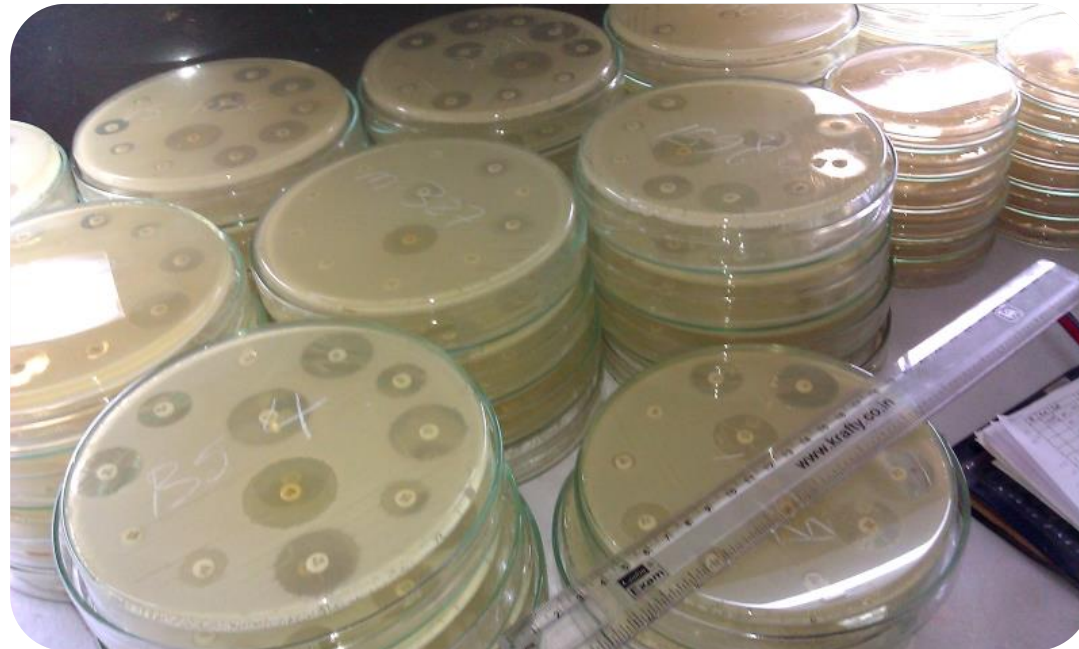
Overview : National action plan for combating antibiotic-resistant bacteria 2560-2564

- Slow emergence of resistant bacteria and prevent spread
- Strengthen National One-Health surveillance efforts to combat resistance
- **Advance development and use of rapid and innovative diagnostic tests for identification and characterization of resistant bacteria**

Current Solution and Pain Points

Bacterial culture

Process takes too long (up to 120 hr)



Challenge



To reduce time and cost for simultaneously antimicrobial resistance detection to prevent inappropriate antibiotic prescription and saved a patient's life

Zensoray

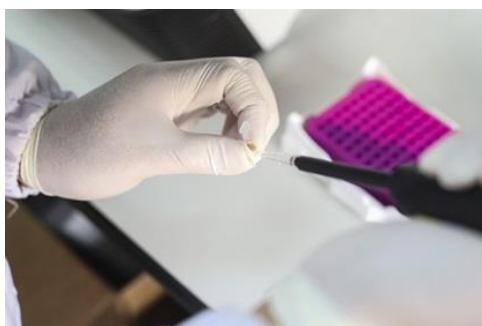
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1



Sample
Blood hemoculture

2

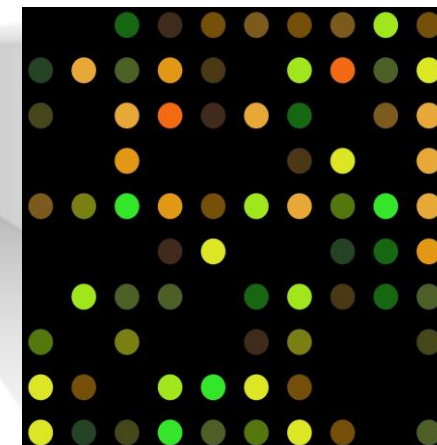
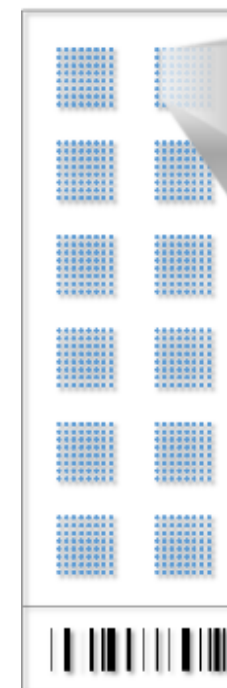


DNA extraction
Extraction from blood hemoculture

3



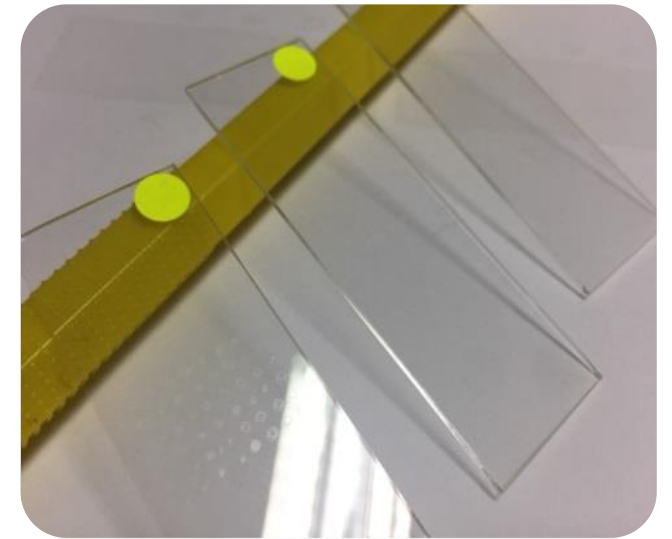
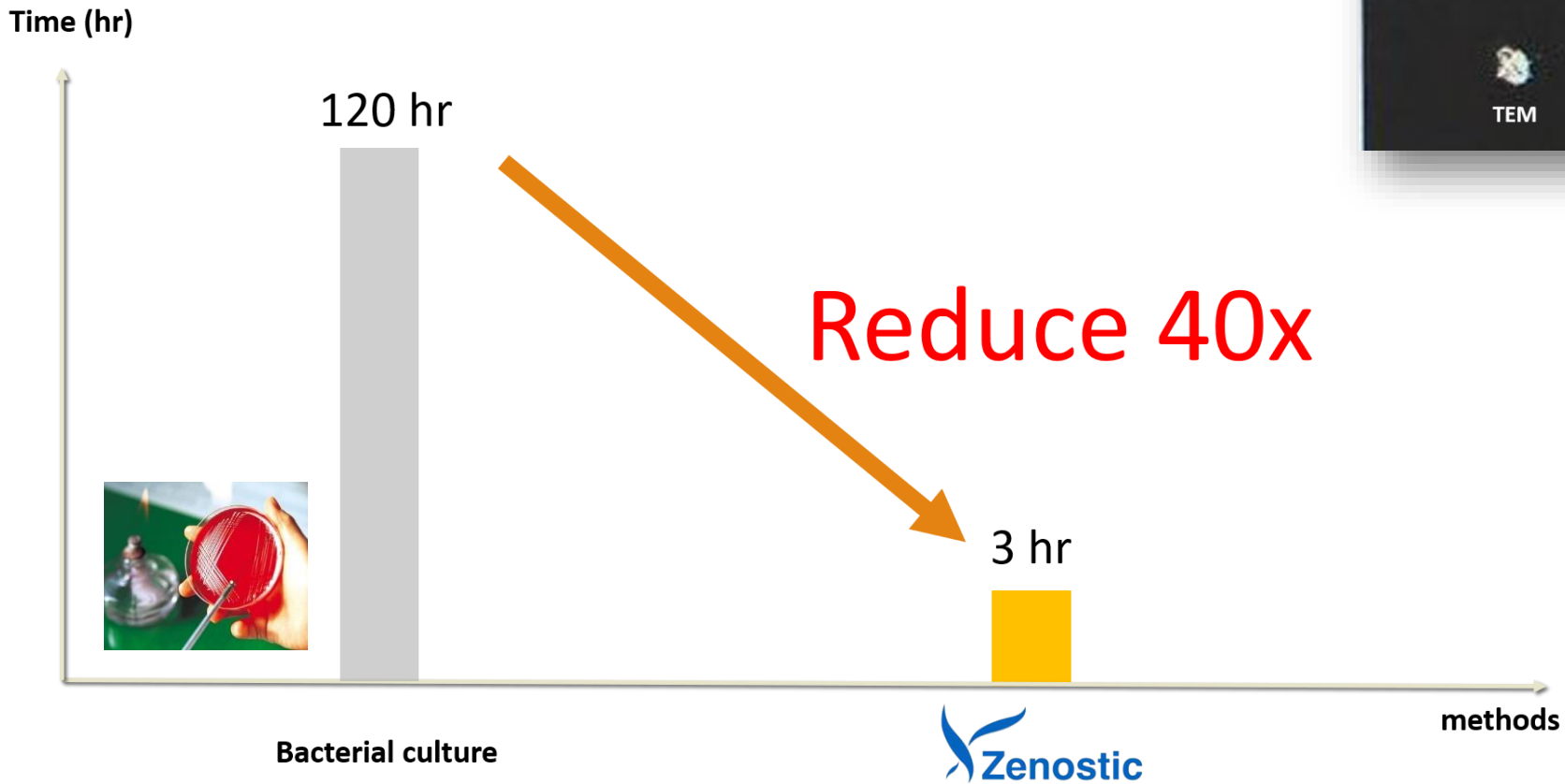
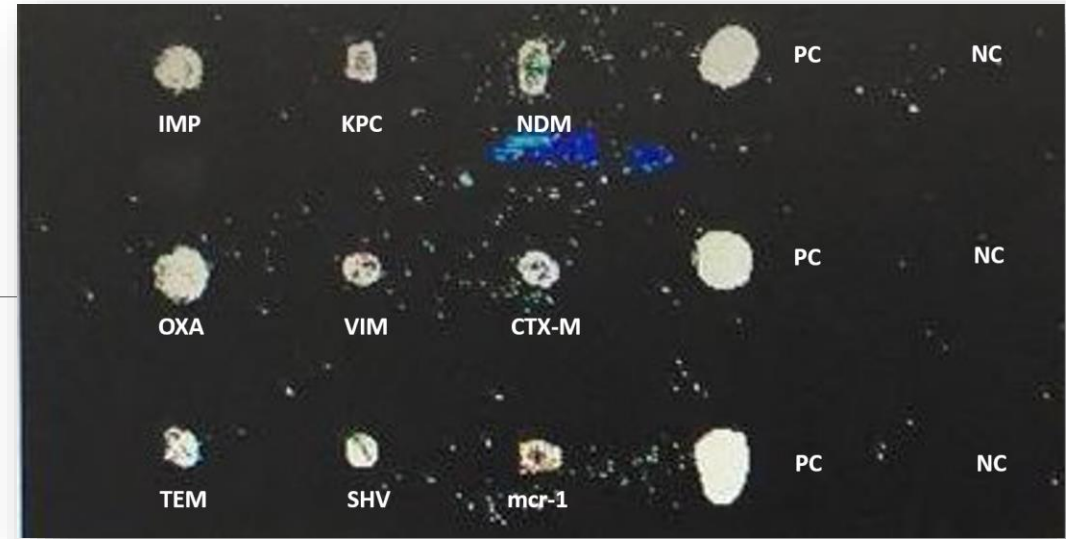
DNA amplification
Increase amount of DNA



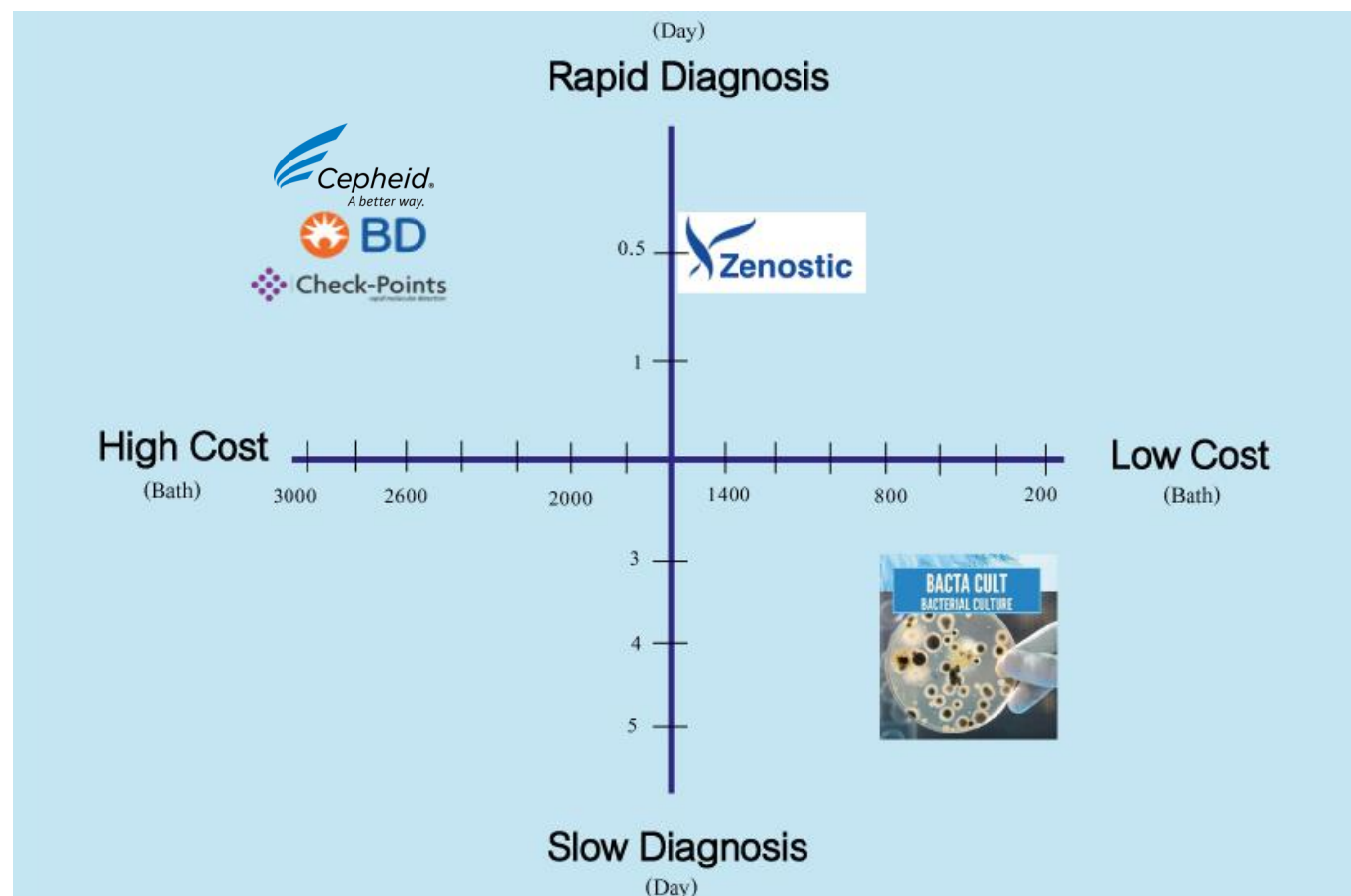
PATENT PENDING

Zensoray Carba-E
Read results

Key benefits







Competitive advantages





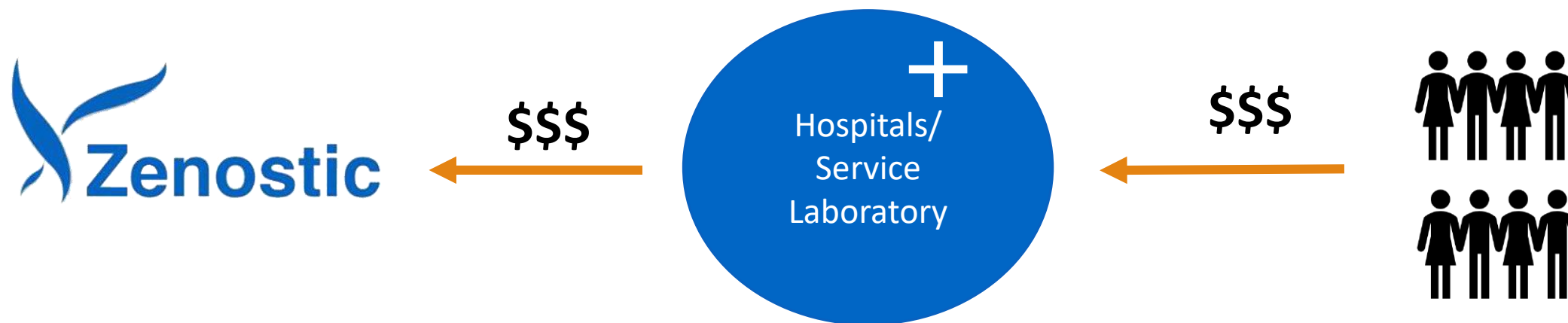
Competitive advantages

Product name	Short assay time	Cover in 3 drug resistance group*	Accuracy	Flexible	Cost (Baht)
 Zensoray Zenostic	✓	✓	✓	✓	1,000
 Check-Points <small>rapid molecular detection</small>	✓	✗	✓	✗	~ 2,500
 BD	✓	✗	✓	✗	~ 2,500
 Cepheid® <small>A better way.</small>	✓	✗	✓	✗	~ 2,500
Current solution	✗	✓	✗	✓	~ 150-500

*Identify ESBL, Carbapenemase and Colistin type in one test



Revenue model

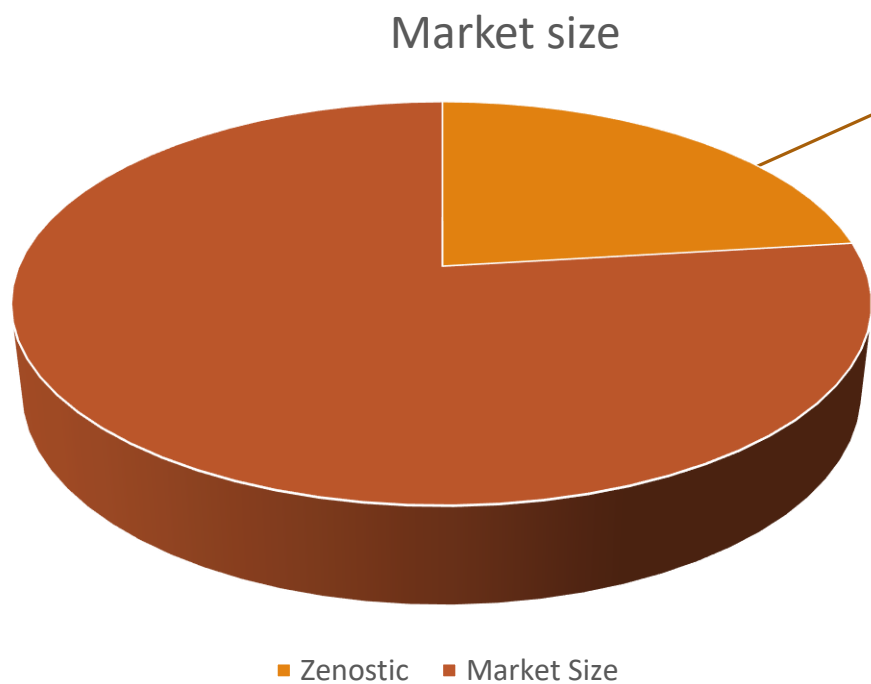




Market

400K
Samples per year

400 MB
per year



**30% Market Shares with
120 MB in revenue per year**

- Hospitals in Bangkok area
- 6 Medical Schools
- 3 Service Labs



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Thank you

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