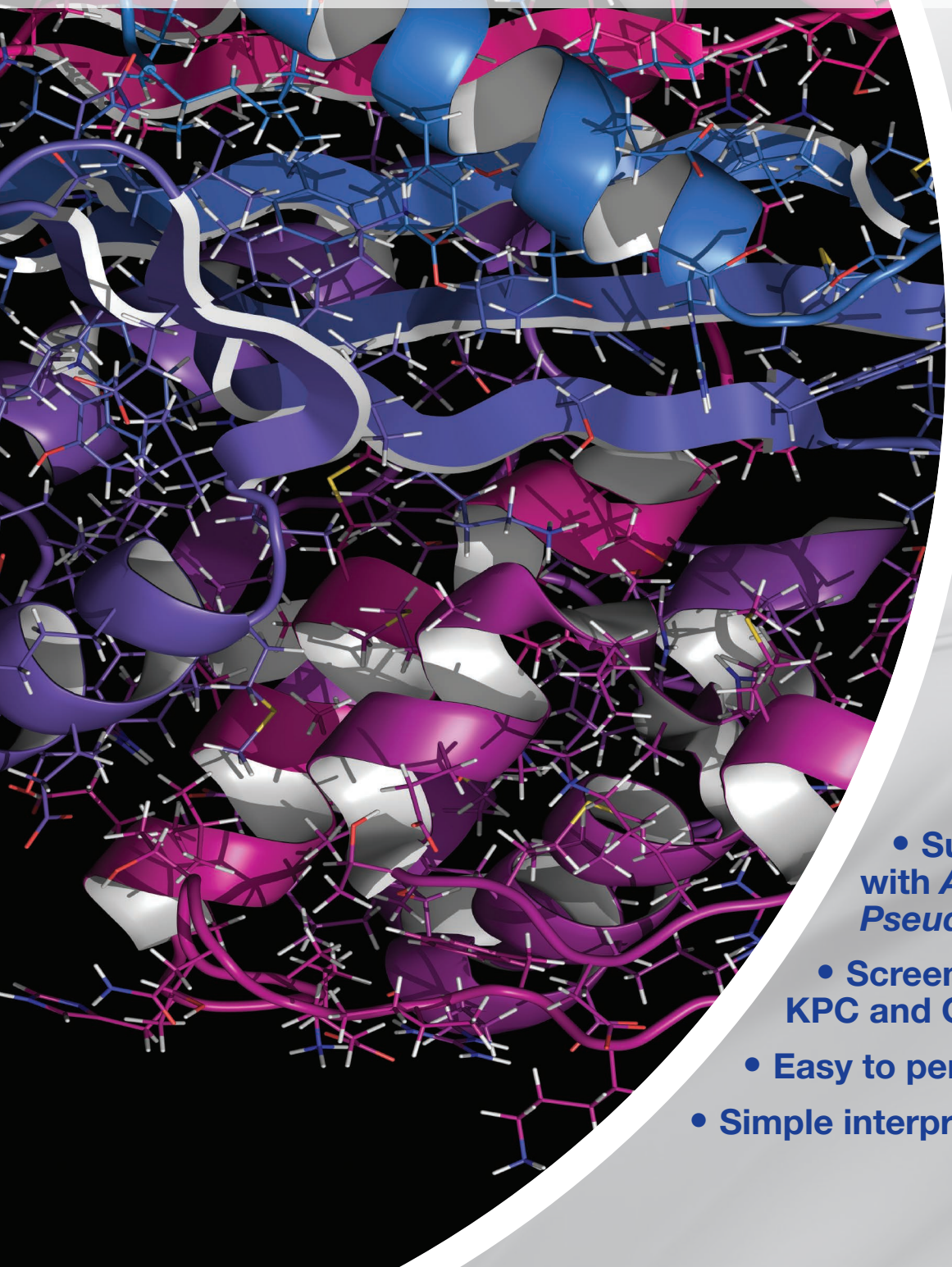
IVD solutions through partnership

Mast Group

MAST® ID

MAST®ICT - Indirect Carbapenemase Test



- Suitable for use with *Acinetobacter* and *Pseudomonas* spp.
- Screening tool for MBL, KPC and OXA enzymes
- Easy to perform
- Simple interpretation

MAST® ID

Antibiotic Resistance

Due to misuse and overuse of antibiotics, antibiotic resistance has quickly disseminated and is considered a major threat to healthcare worldwide. Bacteria are now developing an abundance of mechanisms that allow them to confer resistance to antibiotics, resulting in the development of untreatable super-bugs.

Of increasing concern is the level of carbapenem resistance amongst Gram-negative bacteria caused by carbapenemases, which is not only confined to Enterobacteriaceae but is now found in *Pseudomonas* and *Acinetobacter* spp. Carbapenems are often a last resort when treating resistant Gram-negative infections; however the development of carbapenemases is rapidly rendering them useless.

Although collectively classified as carbapenemases, they vary in their ability to hydrolyze βeta-lactams and can be further categorized as Ambler class A, B or D (see figure 1).

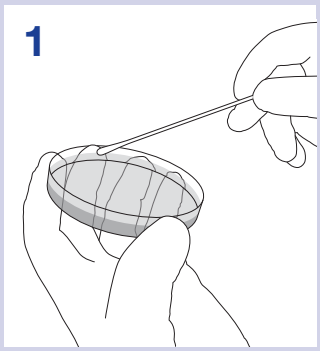
Ambler class	Mechanism	Carbapenemase type
A	Serine based hydrolytic mechanism	KPC
B	Metallo–Zinc catalysed at active site	MBL (IMP, VIM & NDM)
D	Carbapenem-hydrolyzing class D β-lactamases	OXA

Figure 1. Carbapenemase classification

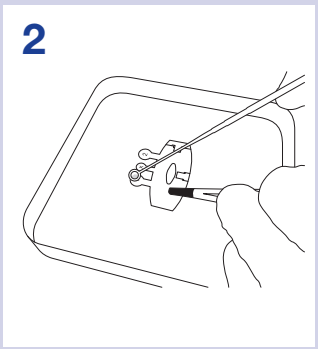
MAST® ICT – Indirect Carbapenemase Test

Carbapenemases are found in organisms that reside in the bowel and are often associated with high mortality rates. They are highly transmissible in healthcare settings and detection is imperative for infection control purposes. Although there are commercial solutions for the detection of carbapenemases in Enterobacteriaceae, options for *Pseudomonas* and *Acinetobacter* spp. remain limited.

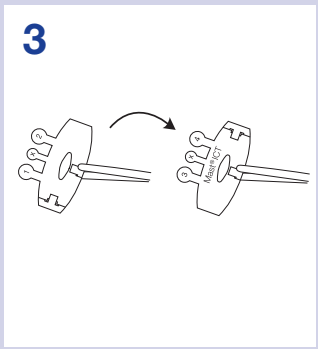
MAST Group Ltd. has developed **MAST®** ICT; a paper test device, based on the principles of the Indirect Carbapenemase Test (ICT). The ICT method utilises a cell permeabilising agent to release carbapenemase enzyme from a Carbapenemase-Producing-Organism (CPO) to hydrolyse an indicator antibiotic in the test system. This allows a normally carbapenem susceptible reporter organism to grow where antibiotic has been hydrolysed, thus producing a distorted zone of inhibition. If the test organism produces no carbapenemase, the reporter organism will form a regular, circular zone of inhibition around the indicator tip.



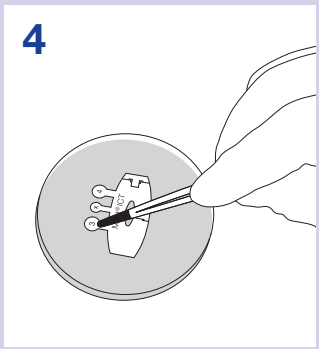
Swab suspension of reporter organism across clean Mueller Hinton plate.



Apply colonies of negative control to **Tip 1** and colonies of test organism to **Tip 2**.



Flip the **MAST®** ICT device with clean forceps.



Apply the **MAST®** ICT device to the inoculated Mueller Hinton plate, with **Tips 1 and 2** in direct contact with the agar surface.

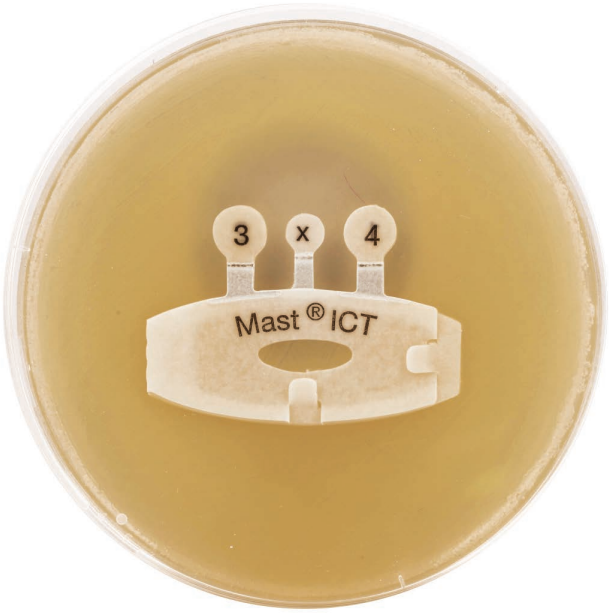
Interpretation of results

Tip 1/4 and 2/3 –ESBL & AmpC Inhibitors + Porinating agent

Tip X – Penem

Positive

Negative



Features and Benefits

Detects the 'Big-5-Carbapenemases'

MAST® ICT is a reliable screening tool for OXA, KPC, NDM, IMP and VIM enzymes - also known as the 'Big-5-Carbapenemases'

Convenient format

Each device is provided individually wrapped with its own desiccant, allowing the product to be used according to your personal laboratory demand.

Suitable for use with *Acinetobacter*, *Pseudomonas* spp. and Enterobacteriaceae

Simple assay for screening of problematic carbapenemase producers, that is easy to perform and cost-effective.

Interpretation by simple observation

Distortion of the zone around Tip 3 indicates carbapenemase-production. No specialist equipment for interpretation.

Ordering Information

Order Code	Product	No. Tests
D74	**MAST**® *ID* - MAST® ICT - Indirect Carbapenemase Test	25

Additional products from Mast's Range

Order Code	Product	Pack Size	No. Tests
D73C	**MAST**DISCS® *Combi Carba plus*	5 × 50 discs	50
D72C	**MAST**DISCS® *Combi* AmpC, ESBL & Carbapenemase Detection Set	6 × 50 discs	50
D71C	**MAST**DISCS® *ID* CAT-ID - Carbapenemase Activity Test	6 × 50 discs	250

ZT191 v 3.0 CEA 10/19

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