

Introduction à l'approche syndromique BioFire® : une solution moléculaire facile, rapide et étendue dans le diagnostic des maladies infectieuses

Nesrin BEN SALEM

Molecular Biology Product Manager Africa

Congrès ATR Nov 2019 - Tunisie

TRADITIONAL VS. TEST SYNDROMIQUE

Traditional Testi



Syndromic Testi

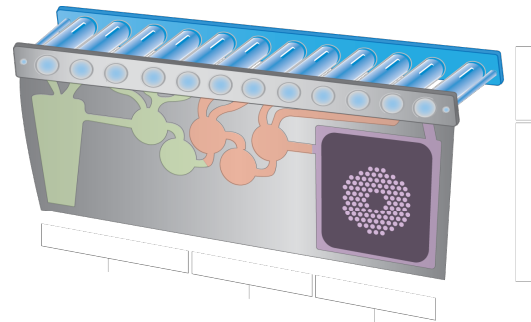


UN SEUL SYSTÈME TOTALEMENT INTÉGRÉ SOLUTION « ALL IN ONE »

Résultats après 45mins à une 1h



—



Manip. 2 min

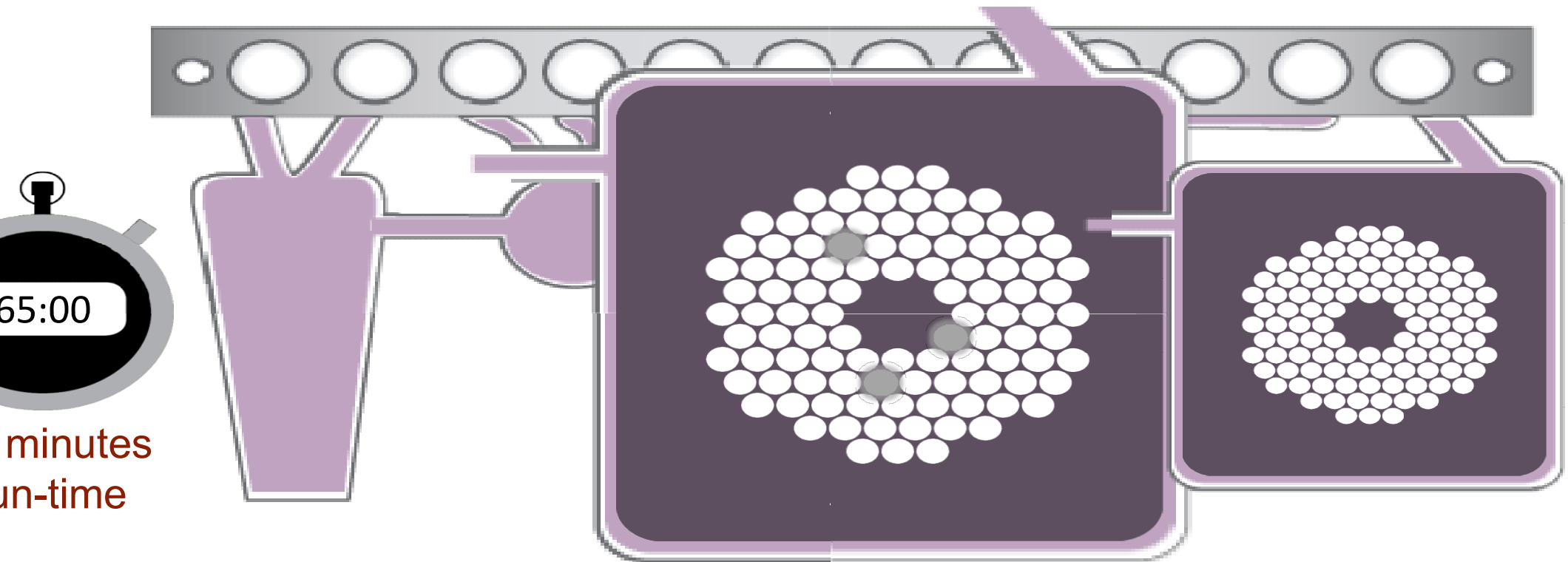
Test : 45-65 min



Manip. 30-90 min

Test : 2 à 6 h

EXTRACTION, AMPLIFICATION ET DÉTECTION D'ÉCHANTILLONS: TOUT EST DANS LA MEME POUCHE



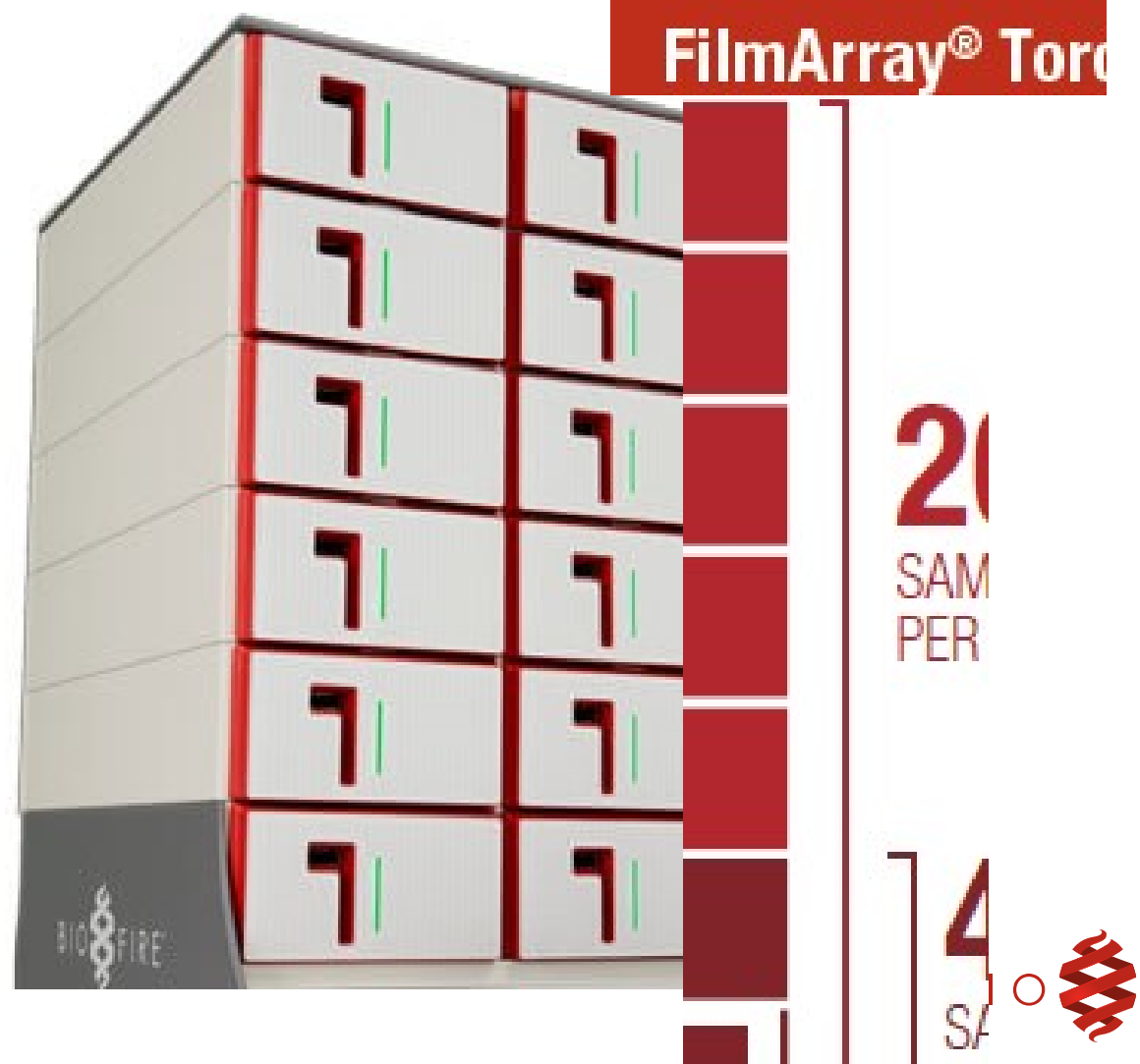
1. Sample moves into lysis chamber. Cells and pathogens are lysed by bead beating, releasing nucleic acids
stranded DNA binding dye monitors each reaction

LES INSTRUMENTS FILMARRAY

FilmArray® 2.0 Sys



FilmArray® TorC



RAPPORTS FACILES À LIRE

BIOMÉ

- Le logiciel FilmArray traite les données et attribue une notification de positif ou négatif pour chaque pathogène, fournissant les résultats dans un seul rapport simple et facile à lire.

FilmArray® Respiratory Panel	
Run Summary	
Sample ID: RYNAND0232	Run Date: 21 Jun 2013
Detected: Influenza A H1-2009 Respiratory Syncytial Virus	Controls: Passed
Equivocal: None	
Result Summary	
Not Detected	Adenovirus
Not Detected	Coronavirus 229E
Not Detected	Coronavirus HKU1
Not Detected	Coronavirus NL63
Not Detected	Coronavirus OC43
Not Detected	Human Metapneumovirus
Not Detected	Human Rhinovirus/Enterovirus
✓ Detected	Influenza A H1-2009
Not Detected	Influenza B
Not Detected	Parainfluenza Virus 1
Not Detected	Parainfluenza Virus 2
Not Detected	Parainfluenza Virus 3
Not Detected	Parainfluenza Virus 4
✓ Detected	Respiratory Syncytial Virus
Not Detected	<i>Bordetella pertussis</i>
Not Detected	<i>Chlamydia pneumoniae</i>

FilmArray® BCID Panel	
Run Summary	
Sample ID: SDY_9621_LED_50_6	
Organisms Detected: <i>Enterobacteriaceae</i> <i>Klebsiella pneumoniae</i>	
Applicable Antimicrobial Resistance Genes: KPC - Detected	
Result Summary - Interpretations	
Antimicrobial Resistance Genes	
✓ Detected	KPC (carbapenem-resistance gene)
⊗ N/A	<i>mecA</i> (methicillin-resistance gene)
⊗ N/A	<i>vanA/B</i> (vancomycin-resistance genes)
⚠ NOTE: Antimicrobial resistance can occur via multiple mechanisms. A Not Detected result for the FilmArray does not indicate antimicrobial susceptibility. Subculturing is required for species identification and susceptibility testing.	
Gram Positive Bacteria	
Not Detected	<i>Enterococcus</i>
Not Detected	<i>Listeria monocytogenes</i>
Not Detected	<i>Staphylococcus</i>
Not Detected	<i>Staphylococcus aureus</i>
Not Detected	<i>Streptococcus</i>
Not Detected	<i>Streptococcus agalactiae</i> (Group B)
Not Detected	<i>Streptococcus pneumoniae</i>
Not Detected	<i>Streptococcus pyogenes</i> (Group A)
Gram Negative Bacteria	
Not Detected	<i>Acinetobacter baumannii</i>
✓ Detected	<i>Enterobacteriaceae</i>
Not Detected	<i>Enterobacter cloacae</i> complex
Not Detected	<i>Escherichia coli</i>
Not Detected	<i>Klebsiella oxytoca</i>
✓ Detected	<i>Klebsiella pneumoniae</i>
Not Detected	<i>Proteus</i>
Not Detected	<i>Serratia marcescens</i>
Not Detected	<i>Haemophilus influenzae</i>
Not Detected	<i>Neisseria meningitidis</i>
Not Detected	<i>Pseudomonas aeruginosa</i>
Yeast	

FilmArray™
GI Panel

BIO FIRE

www.BioFireDx.com

Run Summary

Sample ID: 009196-03-0790

Run Date: 27 Sep 2013

12:03 PM

Detected: *Giardia lamblia*

Controls: Passed

Result Summary

Bacteria

Not Detected *Campylobacter*
Not Detected *Clostridium difficile* toxin A/B
Not Detected *Plesiomonas shigelloides*
Not Detected *Salmonella*
Not Detected *Vibrio*
Not Detected *Vibrio cholerae*
Not Detected *Yersinia enterocolitica*

Diarrheagenic *E. coli*/Shigella

Not Detected Enteropathogenic *E. coli* (EPEC)
Not Detected Enterotoxigenic *E. coli* (ETEC) *lt/st*
Not Detected Shiga-like toxin-producing *E. coli* (STEC) *stx1/stx2*
⊗ N/A *E. coli* O157
Not Detected *Shigella*/Enteroinvasive *E. coli* (EIEC)

Parasites

Not Detected *Cryptosporidium*
Not Detected *Cyclospora cayetanensis*
Not Detected *Entamoeba histolytica*
✓ Detected *Giardia lamblia*

Viruses

Not Detected Adenovirus F 40/41
Not Detected Astrovirus
Not Detected Norovirus GI/GII
Not Detected Rotavirus A
Not Detected Sapovirus

Run Details

Pouch: GI Panel v2.1
Run Status: Completed
Serial No.: 00788640
Lot No.: 133813

Protocol: Stool FA v2.3
Operator: John Madison (jrm)
Instrument: ITI FA "FA1315"

LA METHODE LA PLUS RAPIDE D'OBTENIR DE MEILLEURS RÉSULTATS



SIMPLE : 2 min de manipulation

RAPIDE : Résultat en 45h à 1h

ÉTENDU : Panels syndromiques de 14 à 30 pathogènes

SÉCURISÉ : Système fermé

COMPACT : Toujours assez de place pour l'installer

PANELS BIOFIRE® FILMARRAY®



Respiratory Panels



Up to 22
Targets

• 14 bacteria
• 7 viruses

As target number varies between
any RP1.7, FilmArray RP2+, and
FilmArray RP EZ.

Blood Culture Identification Panel



27
Targets

- 19 bacteria
- 5 yeast
- 3 antibiotic-resistance genes

Gastrointestinal Panel



22
Targets

- 13 bacteria
- 5 viruses
- 4 parasites

Meningitis/Encephalitis Panel



14
Targets

- 6 bacteria
- 7 viruses
- 1 yeast

Pneumonia Panel



34
Targets

- 15 bacteria semi-quantitative
- 3 atypical bacteria
- 8 viruses + MERS-CoV
- 7 antibiotic-resistance genes

CE IVD and FDA-cleared



BIOFIRE FILMARRAY® RESPIRATORY 2 PLUS (RP2 PLUS) PANEL

BIOMÉ

FilmArray® Respiratory Panel 2 *plus* (RP2*plus*)



Fast



Accur

22
PATHOGENS
45^{min}

Viruses

Adenovirus
Coronavirus HKU1
Coronavirus NL63
Coronavirus 229E
Coronavirus OC43
Human Metapneumovirus
Human Rhinovirus/Enterovirus
Influenza A
Influenza A/H1
Influenza A/H3

Influenza A/H1-2009
Influenza B
Middle East Respiratory Syndrome
Coronavirus (MERS CoV)
Parainfluenza Virus 1
Parainfluenza Virus 2
Parainfluenza Virus 3
Parainfluenza Virus 4
Respiratory Syncytial Virus

Bacteria

Bordetella pertussis
Bordetella parapertussis
Chlamydia pneumoniae
Mycoplasma pneumoniae

BIOFIRE FILMARRAY® PNEUMONIA *PLUS* (PN *PLUS*) PANEL

BIOMÉ



BioFire® FilmArray® Pneumonia Panel

BACTERIA

(Semi-Quantitative)

Acinetobacter calcoaceticus-baumannii complex
Enterobacter cloacae complex
Escherichia coli
Haemophilus influenzae
Klebsiella aerogenes
Klebsiella oxytoca
Klebsiella pneumoniae group
Moraxella catarrhalis
Proteus spp.
Pseudomonas aeruginosa

ATYPICAL BACTERIA

(Qualitative)

Chlamydia pneumoniae
Legionella pneumophila
Mycoplasma pneumoniae

VIRUSES

Adenovirus
Coronavirus
Human Metapneumovirus
Human Rhinovirus/Enterovirus
Influenza A
Influenza B

ANTIMICROBIAL RESISTANCE

Methicillin Resistance
mecA/C and

Carbapenem

IMP
KPC
NDM
Oxa-48-like
VIM

ESBL

CTV M

Staphylococcus aureus
Streptococcus agalactiae
Streptococcus pneumoniae
Streptococcus pyogenes

Human Coronavirus
Syndrome Coronavirus
(MERS CoV)
Parainfluenza Virus
Respiratory Syncytial

Sample Type:

Sputum (including ETA) and BAL (including mini-BAL)



Accuracy

1 hr

- Enterococcus*
- Listeria monocytogenes*
- Staphylococcus*
 - Staphylococcus aureus*
- Streptococcus*
 - Streptococcus agalactiae*
 - Streptococcus pneumoniae*
 - Streptococcus pyogenes*

Acinetobacter baumannii
Haemophilus influenzae
Neisseria meningitidis
Pseudomonas aeruginosa
Enterobacteriaceae
Enterobacter cloacae complex
Escherichia coli
Klebsiella oxytoca
Klebsiella pneumoniae

Can
Can
Can
Can
Can
An
Re
med

BIOFIRE FILMARRAY GASTROINTESTINAL (GI) PANEL

BIOMÉ

FilmArray® Gastrointestinal (GI) Panel



Fast



Accurate

22

PATHOGENS

1 hr

Bacteria

Campylobacter
(*jejuni*, *coli*, and *upsaliensis*)
Clostridium difficile (toxin A/B)
Plesiomonas shigelloides
Salmonella
Yersinia enterocolitica
Vibrio
(*parahaemolyticus*, *vulnificus*
and *cholerae*)
Vibrio cholerae

Diarrheagenic *E. coli*/Shigella

Enteraggregative *E. coli* (EAEC)
Enteropathogenic *E. coli* (EPEC)
Enterotoxigenic *E. coli* (ETEC) *lt/st*
Shiga-like toxin-producing
E. coli (STEC) *stx1/stx2*
E. coli O157
Shigella/Enteroinvasive *E. coli* (EIEC)

Vi

Ad
As
No
Ro
Sa

Pa

Cr
Cy
En



BIO

BIOFIRE FILMARRAY® MENINGITIS / ENCEPHALITIS (ME) PANEL



FilmArray® Meningitis/Encephalitis (ME) Panel



Fast



Accurate

14
PATHOGENS
1 hr

Bacteria

Escherichia coli K1
Haemophilus influenzae
Listeria monocytogenes
Neisseria meningitidis
Streptococcus agalactiae
Streptococcus pneumoniae

Viruses

Cytomegalovirus (CMV)
Enterovirus
Herpes simplex virus 1 (HSV-1)
Herpes simplex virus 2 (HSV-2)
Human herpesvirus 6 (HHV-6)
Human parechovirus
Morbilli zoster virus (M/ZV)

Yeast

Cryptococcus neoformans

CE IVD



CE
IVD

⁷ Data on file at bioFire Diagnostics



CONCLUSION

Syndromic
approach

Why?



CONCLUSION

Syndromic
approach

Benefits



PATIENT

Provide better care faster
Avoid unnecessary use of
antimicrobials
Reduce length of hospitalization



CLINICIAN

Provide additional information
required to make informed
decisions on patient
management, often in critical
situations



COMMUNITY

Identifies infectious outbreaks
Helps reduce the inappropriate use
of antimicrobials and potentially
antibiotic resistance



PIONEERING DIAGNOSTICS