FIND ▶▶

LANDSCAPE OF UPCOMING LAM ASSAYS

Morten Ruhwald, MD, PhD
Head of TB programme
FIND

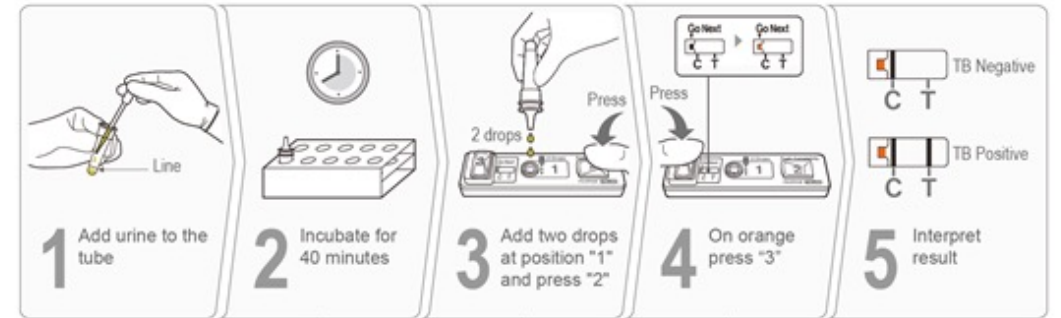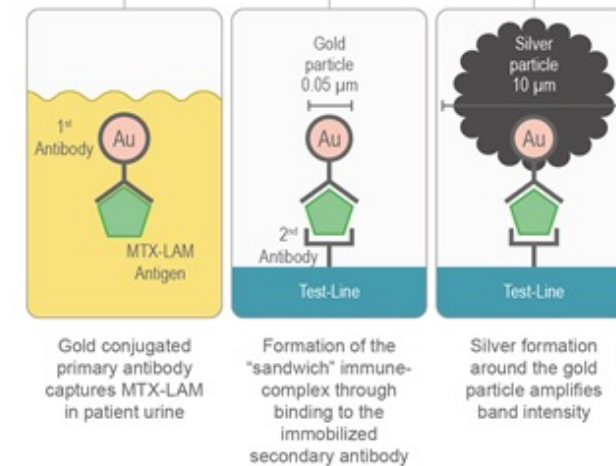Button to release silver ion reagent for amplification

Sample port

2 Drops

Push Completely

Go Next

3

C T

1

2

FUJIFILM TB LAM

Button to release reducing reagent for amplification

Go-next color indicator and control & test line reading window
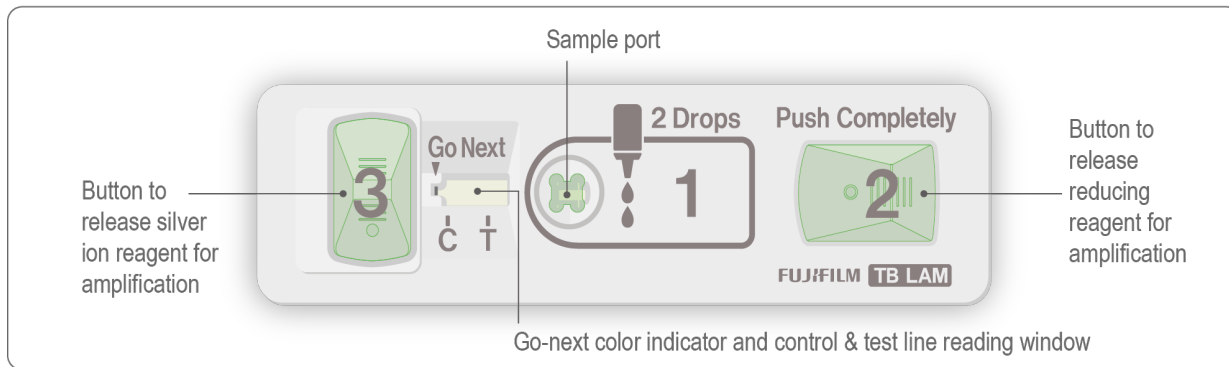
TB Test Procedure

60 minutes from sample collection to result

1 Add urine to the tube — Line

2 Incubate for 40 minutes

3 Add two drops at position "1" and press "2" — 2 drops, Press

4 On orange press "3" — Go Next, Press

5 Interpret result — TB Negative, TB Positive

TB Test Principle

Gold conjugated primary antibody captures MTX-LAM in patient urine

1st Antibody — Au — MTX-LAM Antigen

Formation of the "sandwich" immune-complex through binding to the immobilized secondary antibody

Gold particle 0.05 μm — Au — 2nd Antibody — Test-Line

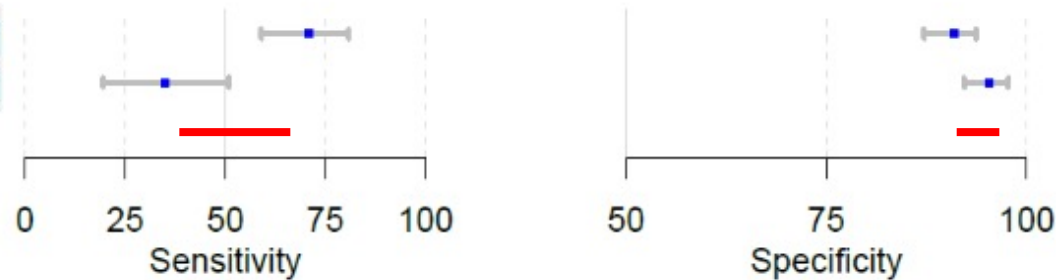Silver formation around the gold particle amplifies band intensity

Silver particle 10 μm — Au — Test-Line

COMPARATIVE PERFORMANCE OF FUJILAM AND ALERELAM IN PLHIV
META ANALYSIS OF 1595 PATIENT SAMPLES FROM 5 COHORTS SSA & VIETNAM

FIND ▶▶

All HIV+					
	N	Sn	[95% CI]	Sp	[95% CI]
FujiLAM	1595	70.7	[59.0 – 80.8]	90.9	[87.2 – 93.7]
AlereLAM	1595	34.9	[19.5 – 50.9]	95.3	[92.2 – 97.7]
Diff Sn and Diff Sp		35.8		−4.4	

| Stratified by CD4 cell count						
	CD4 group	N	Sn	[95% CI]	Sp	[95% CI]
FujiLAM						
	CD4 grp 0–100	677	87.1	[79.3 – 93.6]	80.5	[69.8 – 89.7]
	CD4 grp 100–200	319	62.7	[52.4 – 71.9]	95.0	[85.6 – 99.8]
	CD4 grp >200	581	43.9	[34.3 – 53.9]	97.0	[94.9 – 98.5]
AlereLAM						
	CD4 grp 0–100	677	56.0	[43.9 – 64.9]	93.6	[89.6 – 97.0]
	CD4 grp 100–200	319	25.3	[15.8 – 34.9]	96.7	[89.4 – 99.9]
	CD4 grp >200	581	10.9	[5.2 – 18.4]	97.6	[93.0 – 99.7]

CLINICAL MEDICINE   The Journal of Clinical Investigation

Diagnostic accuracy of 3 urine lipoarabinomannan tuberculosis assays in HIV-negative outpatients

Urine LAM tests	n	TP	FP	FN	TN		Sensitivity (95% CI)		Specificity (95% CI)
AlereLAM	372	12	20	99	241		10.8% (6.3 to 18.0)		92.3% (88.5 to 95.0)
FujiLAM	372	59	3	52	258		53.2% (43.9 to 62.2)		98.9% (96.7 to 99.6)
EclLAM	372	74	5	37	256		66.7% (57.5 to 74.7)		98.1% (95.6 to 99.2)

>15 FujiLAM studies ongoing/planned
FIND expects results from a large evaluation in Q1 2022
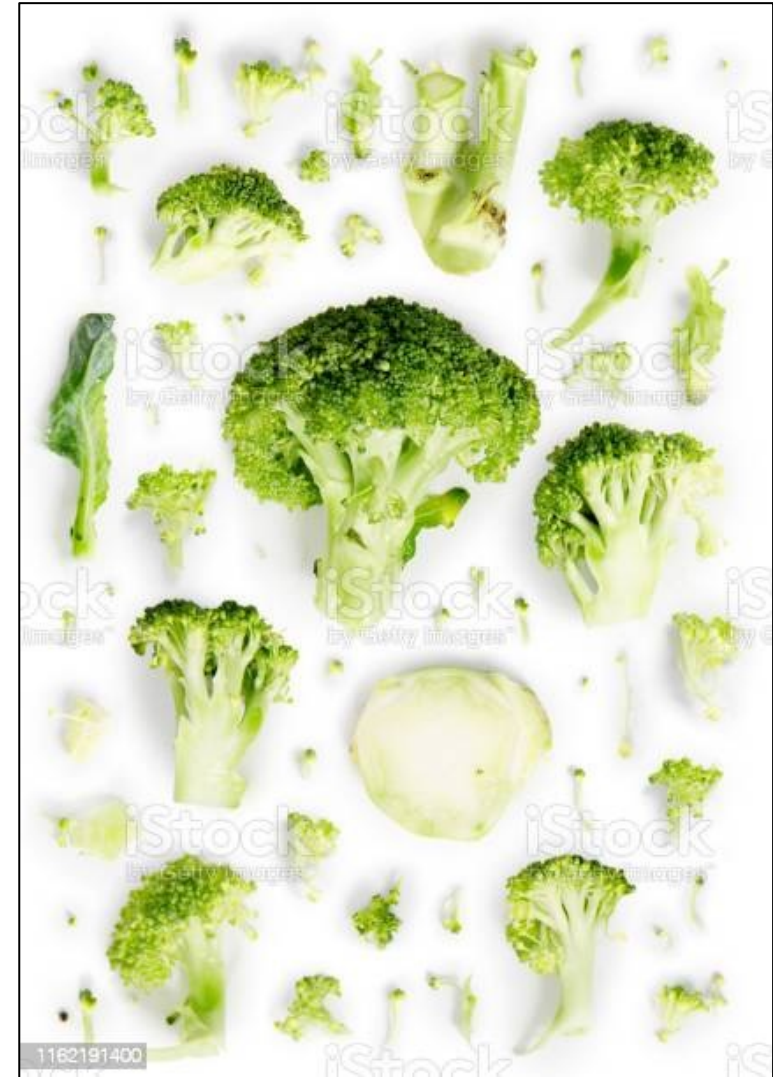**WHO policy review is likely in 2022**

Broger *et al*, PlosMed 2020
Broger et al, JCI 2020
Muyoyeta et al ERJ 2021

Sigal *et al.* 2018
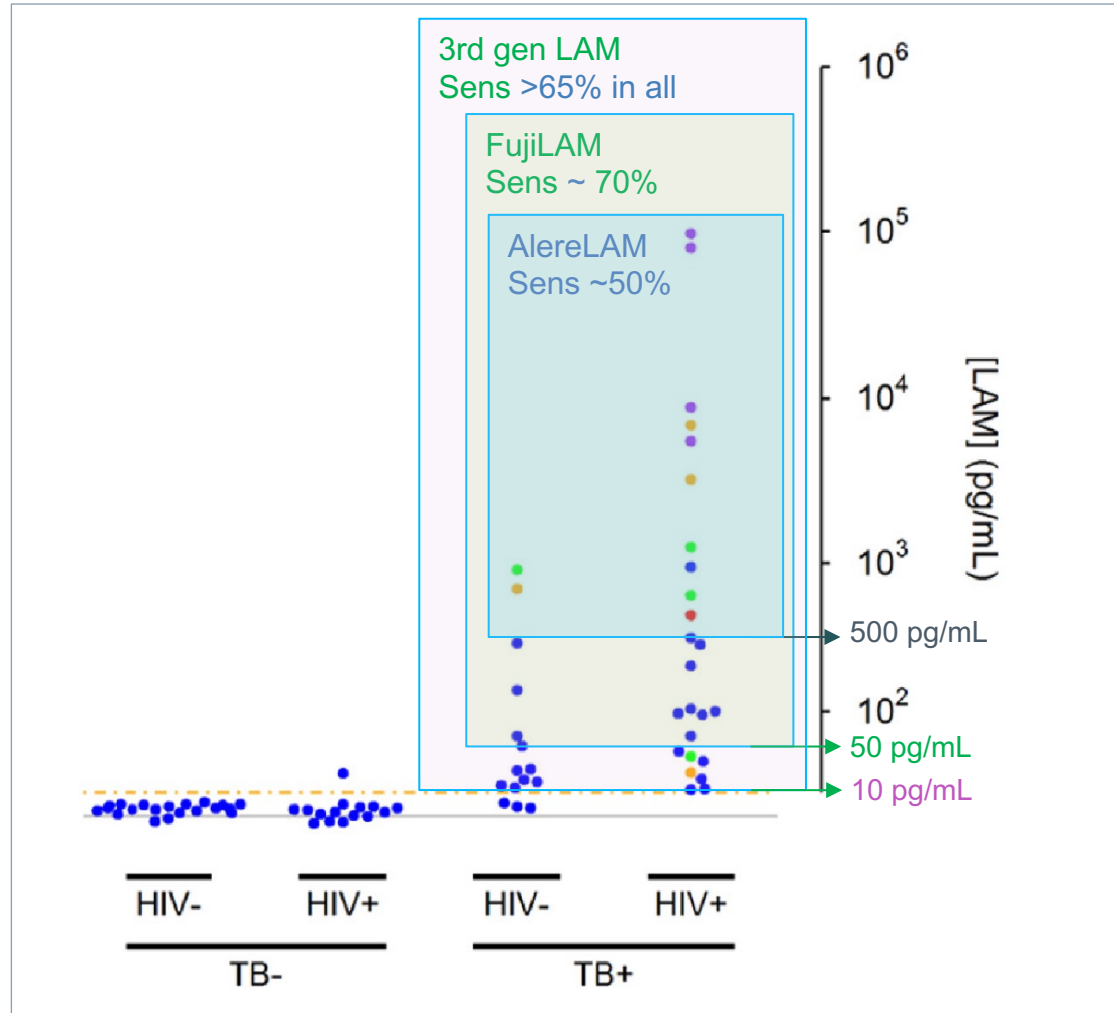
CHALLENGE 2, URINE LAM IS PROBABLY MANY THINGS

LAM from mycobacterial culture

LAM in urine

Ara4/6-MTX glycans

Ara4 glycans

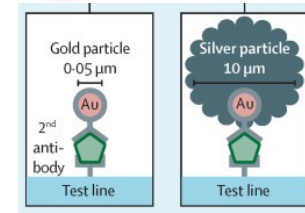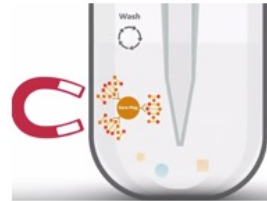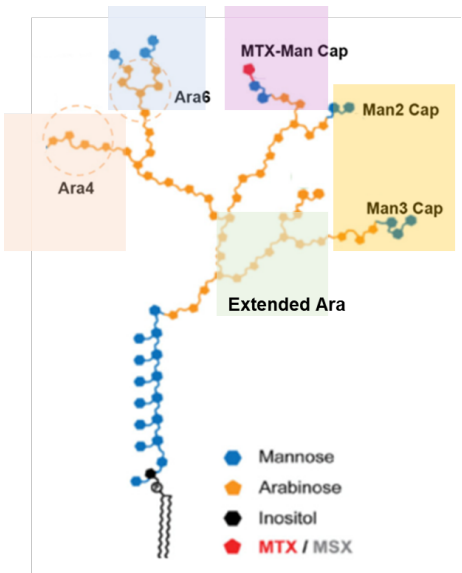IgG
(160 kDa)
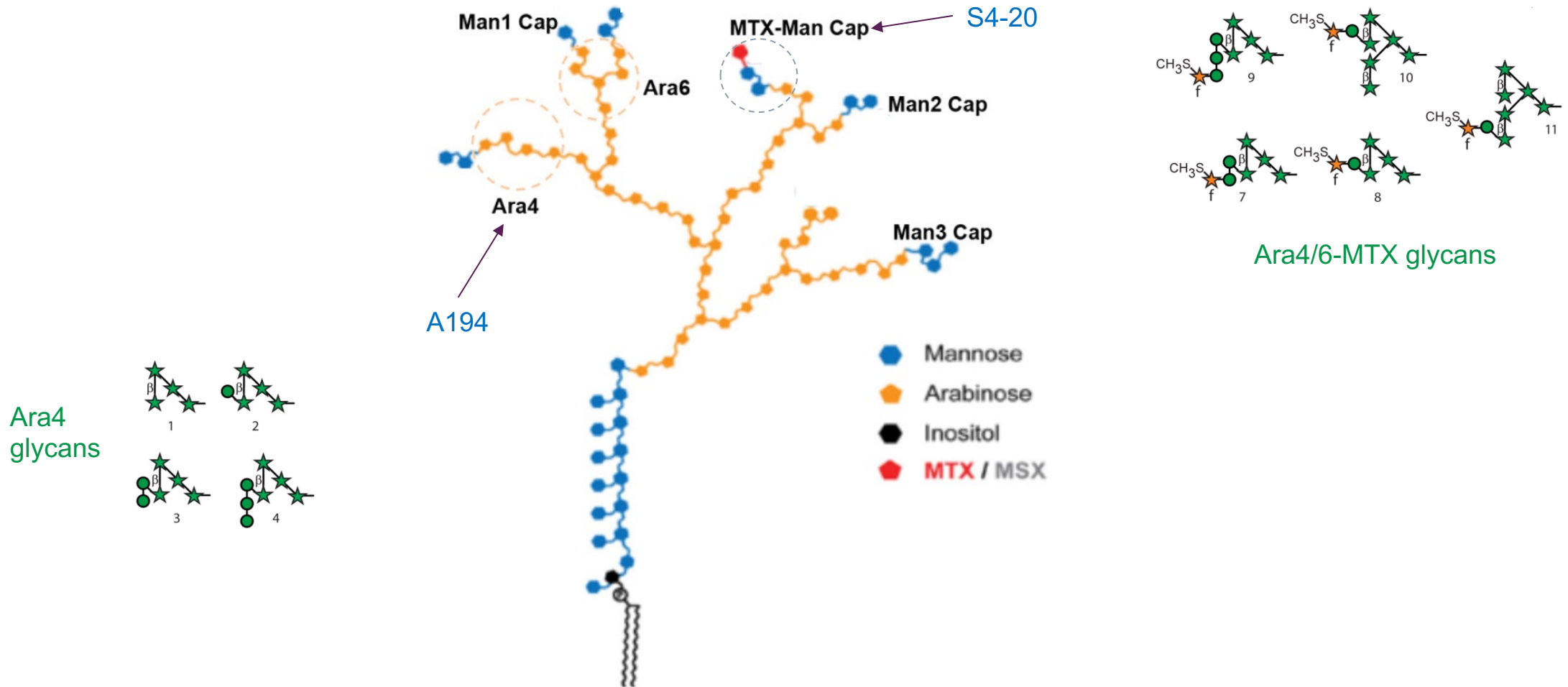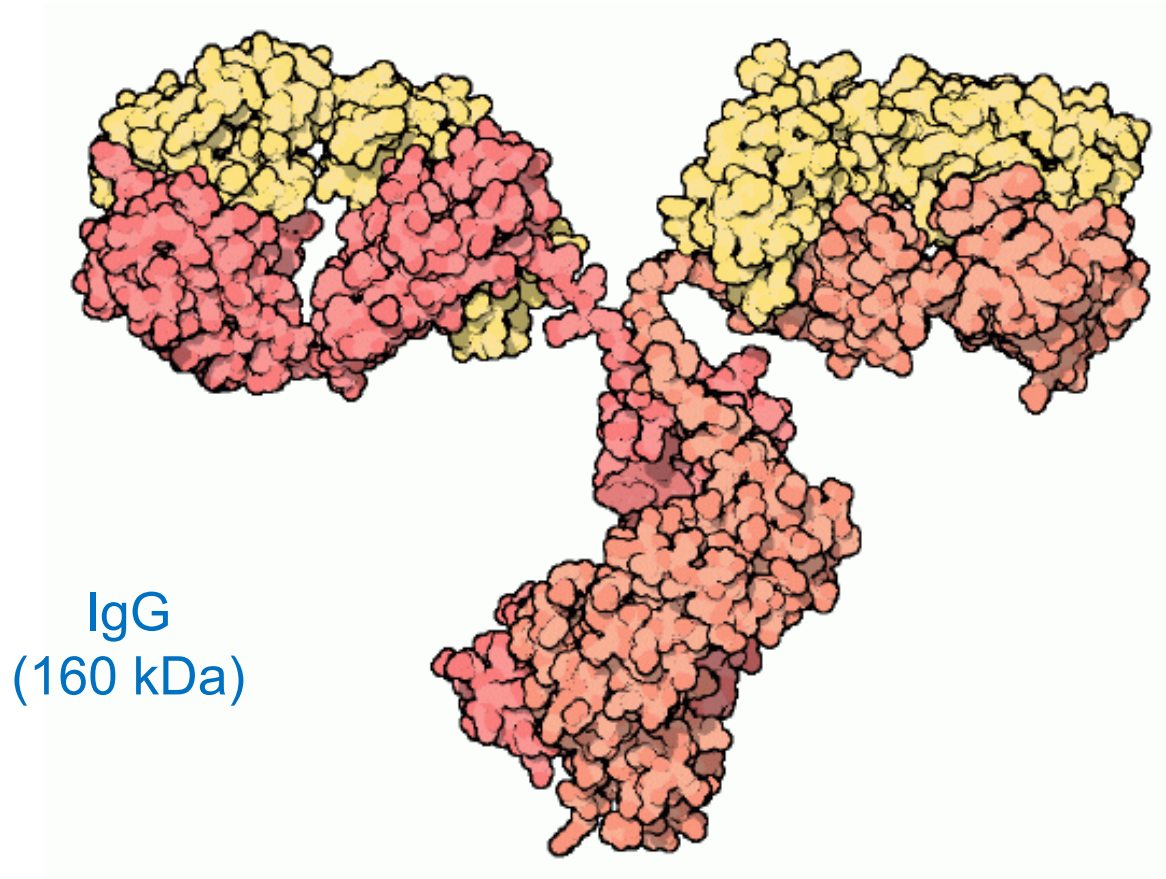
LAM
(17 kDa)

PATHWAYS TO 3ᴿᴰ GENERATION LAM TESTS

3rd Generation LAM assay
Ultra sensitive (<10 pg/mL) to detect LAM in all TB patients

Improved reagents
(antibodies, antigens)

Pre-analytical
Sample Preparation

Innovative
Assay Design

TAKE HOME MESSAGES

- Despite modest sensitivity, Alere LAM assay has a unique role in the diagnostic landscape providing rapid and accessible diagnosis to the sickest patients with the worst prognosis

- FujiLAM is a 2nd generation LAM assay in development with improved performance

- 3rd generation LAM tests with higher sensitivity are pursued by multiple manufacturers, these tests require concentration or readers to deliver urine-based TB detection for all irrespective of HIV status

FIND

Thank you to the team!

Sergio Carmona
Adam Penn-Nicholson
Margaretha De Vos
Emmanuel Moreau
Rita Szekely
Sandra Kik
Andrea Cavellini
Kavi Velen

Anita Suresh
Swapna Uplekar
Andres de la Rossa
Lauri Koivula
Tim Rodwell
Rebecca Colman
Sacha Laurent
Sophia Georghiou

Pamela Nabeta
Audrey Albertini
Mikashmi Kohli
Anna Mantsoki
Aurelien Mace
Tatiana Letsko
Karishma Saran
Sarah-Jane Loveday