AESKULISA alpha-Fodrin-A

# **Instruction manual**

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003 : 2010-10-06

#### 1. Intended Use

**AESKULISA**  $\alpha$ –**Fodrin-A** is a solid phase enzyme immunoassay with recombinant human  $\alpha$ –Fodrin for the quantitative and qualitative detection of IgA antibodies against  $\alpha$ –Fodrin. The assay is a tool in the diagnosis of Sjögren`s Syndrome.

# 2. Clinical Application and Principle of the Assay

Sjögren`s syndrome (SS) is a frequent autoimmune disorder affecting between 0.1 and 1% of the population. It is characterized by keratoconjunctivitis and xerostomia sicca due to lymphocytic infiltration of the lacrimal and salivary glands . Establishing the diagnosis of SS may be difficult since competing criteria have been used for its classification and its symptoms, dryness of the eyes and mouth, are common complaints. In addition, tests to measure production of tear and salivary fluid lack sensitivity and specificity. Evan labial salivary gland biopsies have asensitivity of only 80%, are tediuos to perform and succsessful diagnosis largely depends on the experience of the surgeon and the pathologist involved. Therefore it has been of interest to define autoantibodies characteristic for SS. Rheumatoid factors (RF) and antinuclear antibodies (ANA) are sensitive but nonspecific. The specifity of ANA is increased if they are directed against Ro or La antigens, but these autoantibodies are also observed in other autoimmune disorders such as systemic lupus erythematosus (SLE). Recently, IgG antibodies against  $\alpha$ –fodrin, an intracellular protein assoiated with the cytoskeleton, have been claimed to be both a sensitive and specific marker for SS.

#### Principle of the test

Serum samples diluted 1:101 are incubated in the microplates coated with the specific antigen. Patient's antibodies, if present in the specimen, bind to the antigen. The unbound fraction is washed off in the following step. Afterwards anti-human immunoglobulins conjugated to horseradish peroxidase (conjugate) are incubated and react with the antigen-antibody complex of the samples in the microplates. Unbound conjugate is washed off in the following step. Addition of TMB-substrate generates an enzymatic colorimetric (blue) reaction, which is stopped by diluted acid (color changes to yellow). The rate of color formation from the chromogen is a function of the amount of conjugate bound to the antigen-antibody complex and this is proportional to the initial concentration of the respective antibodies in the patient sample.

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#### 3. Kit Contents

#### To be reconstituted:

5x Sample Buffer 1 vial, 20 ml - 5x concentrated (capped white: yellow solution)

Containing: Tris, NaCl, BSA, sodium azide < 0.1% (preservative)

50x Wash Buffer 1 vial, 20 ml - 50x concentrated (capped white: green solution)

Containing: Tris, NaCl, Tween 20, sodium azide < 0.1% (preservative)

Ready to use:

Negative Control 1 vial, 1.5 ml (capped green: colorless solution)

Containing: Human serum (diluted), sodium azide < 0.1% (preservative)

Positive Control 1 vial, 1.5 ml (capped red: yellow solution)

Containing: Human serum (diluted), sodium azide < 0.1% (preservative)

Cut-off Calibrator 1 vial, 1.5 ml (capped blue: yellow solution)

Containing: Human serum (diluted), sodium azide < 0.1% (preservative)

Calibrators 6 vials, 1.5 ml each 0, 3, 10, 30, 100, 300 U/ml

(color increasing with concentration: yellow solutions)

Containing: Human serum (diluted), sodium azide < 0.1% (preservative)

Conjugate 1 vial,15 ml IgA (capped red : red solution)

Containing: Anti-human immunoglobulins conjugated to horseradish peroxidase

TMB Substrate 1 vial, 15 ml (capped black)

Containing: Stabilized TMB/H<sub>2</sub>O<sub>2</sub>

Stop Solution 1 vial, 15 ml (capped white: colorless solution)

Containing: 1M Hydrochloric Acid

Microtiterplate 12x8 well strips with breakaway microwells

Coating see paragraph 1

### Material required but not provided:

Microtiter plate reader 450 nm reading filter and optional 620 nm reference filter (600-690 nm). Glass ware(cylinder 100-1000ml), test tubes for dilutions. Vortex mixer, precision pipettes (10, 100, 200, 500, 1000 µl) or adjustable multipipette (100-1000ml). Microplate washing device (300 µl repeating or multichannel pipette or automated system), adsorbent paper.

Our tests are designed to be used with purified water according to the definition of the United States Pharmacopeia (USP 26 - NF 21) and the European Pharmacopeia (Eur.Ph. 4th ed.).

# 4. Storage and Shelf Life

Store all reagents and the microplate at 2-8°C/35-46°F, in their original containers. Once prepared, reconstituted solutions are stable for 1 month at 4°C/39°F, at least. *Reagents and the microplate shall be used within the expiry date indicated on each component, only. Avoid intense exposure of TMB solution to light. Store microplates in designated foil, including the desiccant, and seal tightly.* 

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#### 5. Precautions of Use

#### 5.1 Health hazard data

This product is for **IN VITRO DIAGNOSTIC USE** only. Thus, only staff trained and specially advised in methods of in vitro diagnostics may perform the kit. Although this product is not considered particularly toxic or dangerous in conditions of normal use, refer to the following for maximum safety:

### Recommendations and precautions

This kit contains potentially hazardous components. Though kit reagents are not classified being irritant to eyes and skin we recommend to avoid contact with eyes and skin and wear disposable gloves.

WARNING! Calibrators, Controls and Buffers contain sodium azide (NaN<sub>3</sub>) as a preservative. NaN<sub>3</sub> may be toxic if ingested or adsorbed by skin or eyes. NaN<sub>3</sub> may react with lead and copper plumbing to form highly explosive metal azides. On disposal, flush with a large volume of water to prevent azide build-up. Please refer to decontamination procedures as outlined by CDC or other local/national guidelines.

Do not smoke, eat or drink when manipulating the kit.

Do not pipette by mouth.

All human source material used for some reagents of this kit (controls, standards e.g.) has been tested by approved methods and found negative for HbsAg, Hepatitis C and HIV 1. However, no test can guarantee the absence of viral agents in such material completely. Thus handle kit controls, standards and patient samples as if capable of transmitting infectious diseases and according to national requirements.

#### 5.2 General directions for use

Do not mix or substitute reagents or microplates from different lot numbers. This may lead to variations in the results.

Allow all components to reach room temperature (20-32°C/68-89.6°F) before use, mix well and follow the recommended incubation scheme for an optimum performance of the test.

Incubation: We recommend test performance at 30°C/86°F for automated systems.

Never expose components to higher temperature than 37°C/98.6 °F.

Always pipette substrate solution with brand new tips only. Protect this reagent from light. Never pipette conjugate with tips used with other reagents prior.

A definite clinical diagnosis should not be based on the results of the performed test only, but should be made by the physician after all clinical and laboratory findings have been evaluated. The diagnosis is to be verified using different diagnostic methods.

# 6. Sample Collection, Handling and Storage

Use preferentially freshly collected serum samples. Blood withdrawal must follow national requirements.

Do not use icteric, lipemic, hemolysed or bacterially contaminated samples. Sera with particles should be cleared by low speed centrifugation (<1000 x g). Blood samples should be collected in clean, dry and empty tubes. After separation, the serum samples should be used immediately, respectively stored tightly closed at  $2-8^{\circ}\text{C}/35-46^{\circ}\text{F}$  up to three days, or frozen at  $-20^{\circ}\text{C}/-4^{\circ}\text{F}$  for longer periods.

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# 7. Assay Procedure

## 7.1 Preparations prior to pipetting

Dilute concentrated reagents:

Dilute the concentrated sample buffer 1:5 with distilled water (e.g. 20 ml plus 80 ml). Dilute the concentrated wash buffer 1:50 with distilled water (e.g. 20 ml plus 980 ml).

#### Samples:

Dilute serum samples 1:101 with sample buffer (1x) e.g. 1000 µl sample buffer (1x) + 10 µl serum. Mix well!

### Washing:

Prepare 20 ml of diluted wash buffer (1x) per 8 wells or 200 ml for 96 wells e.g. 4 ml concentrate plus 196 ml distilled water.

## Automated washing:

Consider excess volumes required for setting up the instrument and dead volume of robot pipette.

#### Manual washing:

Discard liquid from wells by inverting the plate. Knock the microwell frame with wells downside vigorously on clean adsorbent paper. Pipette 300 µl of diluted wash buffer into each well, wait for 20 seconds. Repeat the whole procedure twice again.

#### Microplates:

Calculate the number of wells required for the test. Remove unused wells from the frame, replace and store in the provided plastic bag, together with desiccant, seal tightly (2-8°C/35-46°F).

#### 7.2 Work flow

For pipetting scheme see Annex A, for the test procedure see Annex B We recommend pipetting samples and calibrators in duplicate.

Cut-off calibrator should be used for qualitative testing only.

- Pipette 100 μl of each patient's diluted serum into the designated microwells.
- Pipette 100 µl calibrators OR cut-off calibrator and negative and positive controls into the designated wells.
- Incubate for 30 minutes at 20-32°C/68-89.6°F.
- Wash 3x with 300 µl washing buffer (diluted 1:50).
- Pipette 100 µl conjugate into each well.
- Incubate for 30 minutes at 20-32°C/68-89.6°F.
- Wash 3x with 300 µl washing buffer (diluted 1:50).
- Pipette 100 µl TMB substrate into each well.
- Incubate for 30 minutes at 20-32°C/68-89.6°F, protected from intense light.
- Pipette 100 µl stop solution into each well, using the same order as pipetting the substrate.
- Incubate 5 minutes minimum.
- Agitate plate carefully for 5 sec.
- Read absorbance at 450 nm (optionally 450/620 nm) within 30 minutes.

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# 8. Quantitative and Qualitative Interpretation

For **quantitative interpretation** establish the standard curve by plotting the **optical density (OD) of each calibrator (y-axis)** with respect to the corresponding concentration values in **U/ml (x-axis)**. For best results we recommend log/lin coordinates and 4-Parameter Fit. From the OD of each sample, read the corresponding antibody concentrations expressed in **U/ml**.

Normal Range	<b>Equivocal Range</b>	Positive Results
< 12 U/ml	12 - 18 U/ml	>18 U/ml

### Example of a standard curve

We recommend pipetting calibrators in parallel for each run.

Calibrators IgA	OD 450/620 nm	CV % (Variation)
0 U/ml	0.049	0.0
3 U/ml	0.164	2.6
10 U/ml	0.332	2.5
30 U/ml	0.675	0.9
100 U/ml	1.387	0.0
300 U/ml	2.272	0.5

## Example of calculation

Patient	Replicate (OD)	Mean (OD)	Result (U/ml)
P 01	0.763/0.787	0.775	37.3
P 02	1.053/1.039	1.046	61.5

For lot specific data, see enclosed quality control leaflet. Medical laboratories might perform an inhouse Quality Control by using own controls and/or internal pooled sera, as foreseen by EU regulations.

### Do not use this example for interpreting patients results!

Each laboratory should establish its own normal range based upon its own techniques, controls, equipment and patient population according to their own established procedures.

For qualitative interpretation read the optical density of the cut-off calibrator and the patient samples. Compare patient 'sOD with the OD of the cut-off calibrator. For qualitative interpretation we recommend to consider sera within a range of 20% around the cut-off value as equivocal. All samples with higher ODs are considered positive, samples with lower ODs are considered negative.

Negative: OD patient < 0.8 x OD cut-off

Equivocal:  $0.8 \times OD_{cut-off} \le OD_{patient} \le 1.2 \times OD_{cut-off}$ 

Positive OD patient > 1.2 x OD cut-off

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#### 9. Technical Data

Sample material: serum

**Sample volume:** 10 μl of sample diluted 1:101 with 1x sample buffer

**Total incubation time:** 90 minutes at 20-32°C/68-89.6°F

Calibration range: 0-300 U/ml

**Analytical sensitivity:** 1.0 U/ml

**Storage:** at 2-8°C/35-46°F use original vials, only

Number of determinations: 96 tests

#### 10. Performance Data

### 10.1 Analytical sensitivity

Testing sample buffer 30 times on *AESKULISA* α–*Fodrin-A* gave an analytical sensivity of 1.0 U/ml.

#### 10.2 Specificity ans Sensitivity

The microplates are coated with **recombinant human**  $\alpha$ –**Fodrin.** No crossreactivities to other auto-antigens have been found. The *AESKULISA*  $\alpha$ -Fodrin tests show 98% and 96% diagnostic specificity for IgA and IgG respectively. These tests show 63% and 52% diagnostic sensitivity for IgA and IgG respectively. The data has been aquired with the *AESKULISA*  $\alpha$ –*Fodrin-A* (*REF7162*).

#### Correlation:

The comparability of performance data was assessed with at least 30 sera tested on both, AESKULISA 7162 and AESKULISA 3162. A linear regression analysis of the two products showed that the two products are equivalent. Data can be received upon request.

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#### 10.3 Linearity

Chosen sera have been tested with this kit and found to dilute linearly. However, due to the heterogeneous nature of human autoantibodies there might be samples that do not follow this rule.

		measured	expected	
Sample	Dilution	concentration	concentration	Recovery
No.	Factor	(U/ml)	(U/ml)	(%)
1	1 / 100	23.2	23.0	100.9
	1 / 200	11.4	11.5	99.1
	1 / 400	5.4	5.8	93.1
	1 / 800	2.7	2.9	93.1
2	1 / 100	45.5	45.0	101.1
	1 / 200	22.5	22.5	100.0
	1 / 400	10.4	11.3	92.0
	1 / 800	5.3	5.6	94.6

#### 10.4 Precision

To determine the precision of the assay, the variability (intra and inter-assay) was assessed by examining its reproducibility on three serum samples selected to represent a range over the standard curve.

In	tra-Assa	ay
Sample	Mean	CV
No.	(U/ml)	(%)
1	23.5	2.5
2	81.2	4.8
3	86.8	8.8

In	ter-Assa	ay
Sample	Mean	CV
No.	(U/ml)	(%)
1	24.7	2.9
2	52.7	5.4
3	87.0	6.5

#### 10.5 Calibration

Due to the lack of international reference calibration this assay is calibrated in arbitrary units (U/ml).

#### 11. Literature

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3. Vitali C, Bombardieri S, Moutsopoulos HM, Balestrieri G, et al. (1993).

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# **ANNEX A: Pipetting scheme**

We suggest pipetting calibrators, controls and samples as follows:

For **quantitative interpretation** use calibrators to establish a standard curve.

For qualitative interpretation use cut-off calibrator.

			ive inte ablish a	-			for <b>qualitative interpretation</b> use cut- off calibrator					
	1	2	3	4	5	6	7	8	9	10	11	12
Α	CalA	CalE	P1				NC	P2				
В	CalA	CalE	P1				NC	P2				
С	CalB	CalF	P2				CC	P3				
D	CalB	CalF	P2				CC	P3				
Е	CalC	PC	P3				PC					
F	CalC	PC	P3				PC					
G	CalD	NC					P1					
Н	CalD	NC			·		P1					

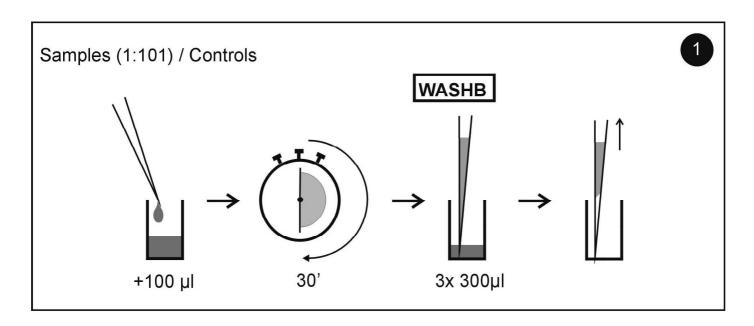
CalA: calibrator A, CalB: calibrator B, CalC: calibrator C, CalD: calibrator D, CalE: calibrator E,

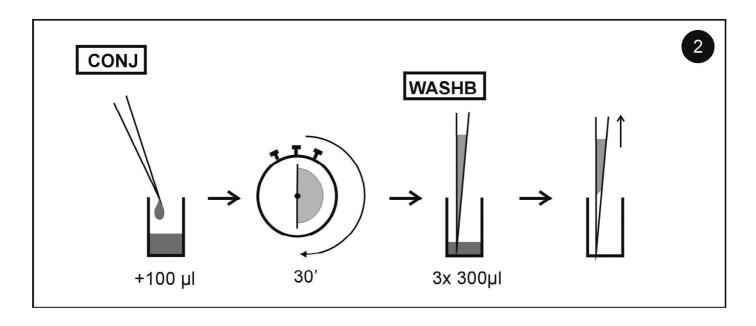
CalF: calibrator F PC: positive control NC: negative control CC: Cut-off calibrator

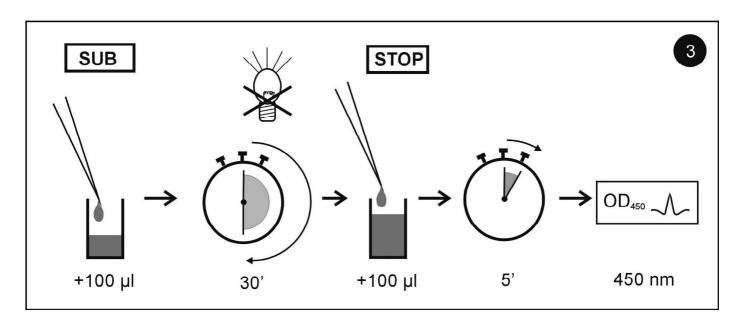
P1: patient 1 P2: patient 2 P3: patient 3

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# **Annex B: Test Procedure**







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ssay/Test:			I	Incubation / Inkub. :	ínkub. :	1.	mim		Date,	Date/ Datum:		
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	Diagnosi in vitro	♦ For in vitro diagnostic use
IVD	♦ Pour diagnostic in vitro	◆ Para uso diagnóstico in vitro
ועטו	♦ In Vitro Diagnostikum	<ul> <li>◆ In Vitro Διαγνωστικό μέσο</li> </ul>
	◆ Para uso Diagnóstico in vitro	
	◆ Numero d'ordine	◆ Cataloge number
REF	♦ Référence Catalogue	♦ Numéro de catálogo
	◆ Bestellnummer	<ul><li>◆ Αριθμός παραγγελίας</li></ul>
	♦ Número de catálogo	
	<ul> <li>Descrizione lotto</li> </ul>	♦ Lot
LOT	♦ Lot	♦ Lote
LOT	<ul> <li>Chargen Bezeichnung</li> </ul>	<ul> <li>Χαρακτηρισμός παρτίδας</li> </ul>
	♦ Lote	
	◆ Conformità europea	◆ EC Declaration of Conformity
(€	<ul> <li>Déclaration CE de Conformité</li> </ul>	◆ Declaración CE de Conformidad
7	◆ Europäische Konformität	<ul><li>◆ Ευρωπαϊκή συμφωνία</li></ul>
	<ul> <li>Déclaração CE de Conformidade</li> </ul>	
	♦ 96 determinazioni	♦ 96 tests
\96/	♦ 96 tests	♦ 96 pruebas
39	◆ 96 Bestimmungen	<ul> <li>96 προσδιορισμοί</li> </ul>
V	♦ 96 Testes	T de impodulopiopio
		A. Con instructions for use
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الملا	Gebrauchsanweisung beachten	<ul> <li>Λάβετε υπόψη τις οδηγίες χρήσης</li> </ul>
, ,	◆ Ver as instrucões de uso     ◆ Do utilizzarai entre	A Hoo by
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1 2 4	Utilise avant le	Utilizar antes de
	Verwendbar bis	<ul><li>Χρήση μέχρι</li></ul>
	Utilizar antes de	
<b>^</b> -+8°C	♦ Conservare a 2-8°C	♦ Store at 2-8°C (35-46°F)
<b>∐</b> -**℃	♦ Conserver à 2-8°C	♦ Conservar a 2-8°C
+2°C- <b>/  </b>	◆ Lagerung bei 2-8°C	♦ Φυλάσσεται στους 2-8°C
•	♦ Conservar entre 2-8°C	-
	♦ Prodotto da	Manufactured by
A A	♦ Fabriqué par	◆ Fabricado por
	Hergestellt von	<ul> <li>Κατασκευάζεται από</li> </ul>
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	Calibratore cut-off	◆ Cut off Calibrator
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ICO-CALI	Grenzwert Kalibrator	<ul> <li>Calibrador de cut-off</li> <li>Φοριακός ορός Αντιδραστήριο βαθμονόμησης</li> </ul>
000/1		<ul> <li>Φιακός όμος Αντισμαστήμιο βασμονομήσης</li> </ul>
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	Controllo positivo     Controllo Positif	Positive Control     Occupated Positives
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0011	Positiv Kontrolle	<ul> <li>Θετικός ορός ελέγχου</li> </ul>
	◆ Controlo positivo	
	◆ Controllo negativo	♦ Negative Control
	◆ Contrôle Négatif	◆ Control Negativo
CON	♦ Negativ Kontrolle	<ul><li>◆ Αρνητικός ορός ελέγχου</li></ul>
	♦ Controlo negativo	
	◆ Calibratore	◆ Calibrator
CAL	◆ Etalon	◆ Calibrador
UAL	◆ Kalibrator	<ul> <li>Αντιδραστήριο βαθμονόμησης</li> </ul>
	◆ Calibrador	
	♦ Recupero	♦ Recovery
RC	◆ Corrélation	♦ Recuperado
INC.	♦ Wiederfindung	<ul><li>Ανάκτηση</li></ul>
	◆ Recuperação	
	♦ Coniugato	◆ Conjugate
	♦ Conjugé	◆ Conjugado
CONJ	♦ Konjugat	<ul><li>Σύζευγμα</li></ul>
	◆ Conjugado	,
	Micropiastra rivestita	◆ Coated microtiter plate
	♦ Microplague sensibilisée	Microplaca sensibilizada
MP	Beschichtete Mikrotiterplatte	<ul><li>▼ Ινίιστορίατα serisibilizada</li><li>◆ Επικαλυμμένη μικροπλάκα</li></ul>
	Microplaca revestida	+ Eminanoppevij pinpomnunu
	·	A Coated pinalata
	Piastra ad aghi rivestita     Piante consibilisée	Coated pinplate     Pinplate consibilizada
PINP	Pinplate sensibilisée     Passhiphtata Pinplatta	♦ Pinplate sensibilizada
I IINF	Beschichtete Pinplatte	<ul><li>◆ Επικαλυμμένη πλάκα Pin</li></ul>
	Pinplate revestida	
	♦ Tampone di lavaggio	♦ Wash buffer
WASHB 50x	◆ Tampon de Lavage	♦ Solución de lavado
אטכןטווטראיא	♦ Waschpuffer	<ul><li>◆ Ρυθμιστικό διάλυμα πλύσης</li></ul>
	<ul> <li>♦ Solução de lavagem</li> </ul>	
	◆ Tampone substrato	♦ Substrate buffer
	I	
	♦ Substrat	◆ Tampón sustrato
SUB	<ul><li>◆ Substrat</li><li>◆ Substratpuffer</li></ul>	<ul><li>◆ Iampon sustrato</li><li>♦ Ρυθμιστικό διάλυμα υποστρώματος</li></ul>
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SUB	<ul><li>◆ Substratpuffer</li><li>◆ Substrato</li></ul>	<ul> <li>◆ Ρυθμιστικό διάλυμα υποστρώματος</li> </ul>
	Substratpuffer     Substrato     Reagente bloccante	<ul><li>◆ Ρυθμιστικό διάλυμα υποστρώματος</li><li>◆ Stop solution</li></ul>
	◆ Substratpuffer     ◆ Substrato     ◆ Reagente bloccante     ◆ Solution d'Arrêt	<ul> <li>• Ρυθμιστικό διάλυμα υποστρώματος</li> <li>• Stop solution</li> <li>• Solución de parada</li> </ul>
SUB	◆ Substratpuffer     ◆ Substrato     ◆ Reagente bloccante     ◆ Solution d'Arrêt     ◆ Stopreagenz	<ul><li>◆ Ρυθμιστικό διάλυμα υποστρώματος</li><li>◆ Stop solution</li></ul>
	<ul> <li>Substratpuffer</li> <li>Substrato</li> <li>Reagente bloccante</li> <li>Solution d'Arrêt</li> <li>Stopreagenz</li> <li>Solucão de paragem</li> </ul>	<ul> <li>• Ρυθμιστικό διάλυμα υποστρώματος</li> <li>• Stop solution</li> <li>• Solución de parada</li> <li>• Αντιδραστήριο διακοπής αντίδρασης</li> </ul>
STOP	<ul> <li>Substratpuffer</li> <li>Substrato</li> <li>Reagente bloccante</li> <li>Solution d'Arrêt</li> <li>Stopreagenz</li> <li>Solucão de paragem</li> <li>Tampone campione</li> </ul>	<ul> <li>◆ Ρυθμιστικό διάλυμα υποστρώματος</li> <li>◆ Stop solution</li> <li>◆ Solución de parada</li> <li>◆ Αντιδραστήριο διακοπής αντίδρασης</li> <li>◆ Sample buffer</li> </ul>
STOP	Substratpuffer Substrato Reagente bloccante Solution d'Arrêt Stopreagenz Solucão de paragem Tampone campione Tampon Echantillons	<ul> <li>• Ρυθμιστικό διάλυμα υποστρώματος</li> <li>• Stop solution</li> <li>• Solución de parada</li> <li>• Αντιδραστήριο διακοπής αντίδρασης</li> <li>• Sample buffer</li> <li>• Tampón Muestras</li> </ul>
	<ul> <li>Substratpuffer</li> <li>Substrato</li> <li>Reagente bloccante</li> <li>Solution d'Arrêt</li> <li>Stopreagenz</li> <li>Solucão de paragem</li> <li>Tampone campione</li> </ul>	<ul> <li>◆ Ρυθμιστικό διάλυμα υποστρώματος</li> <li>◆ Stop solution</li> <li>◆ Solución de parada</li> <li>◆ Αντιδραστήριο διακοπής αντίδρασης</li> <li>◆ Sample buffer</li> </ul>