DATA SHEET-V3
REMBRANDT® HMGA2 BREAK APART FISH DETECTION
RESEARCH USE ONLY (RUO)

RUO

PanPath

Ref		
C825K.2030.05	Σ	5 T
C825K.2030.10	Σ	10 T

Intended use

I. The REMBRANDT® HMGA2 break apart FISH detection assay is intended for the detection of a translocation of the HMGA2 gene on chromosome 12, locus q14.3, by means of *in situ* hybridization.

II. The REMBRANDT® HMGA2 break apart FISH detection assay is intended for the detection of a translocation of the HMGA2 gene on chromosome 12 in fixed cells. The clinical interpretation of the results should not be established on the basis of this test.

III. The intended users are qualified laboratory employees in cytology and/or pathology. The product is intended for professional use.

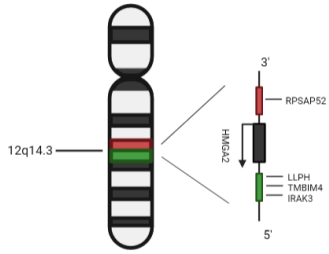
Clinical relevance

The REMBRANDT® HMGA2 break apart probe is intended to identify rearrangements of the HMGA2 region, which lies on chromosome 12 at location 12q14.3. High Mobility Group AT-hook 2, or HMGA2, belongs to the High Mobility Group (HMG) protein gene family. The gene encodes for proteins that arrange the assembly of nucleoprotein complexes and play an important role in gene transcription, recombination and chromatin structure. HMGA2 is also known as a proto-oncogene in PA (pleomorphic adenoma) and CA ex-PA (carcinoma ex pleomorphic adenoma). Fusion partners include NFIB, WIF1 and FHIT which influence the activation of the expression of HMGA2. Target genes include the cell-cycle regulators CCNA1 and CCNB2 (Stenman et al., 2010). HMGA2 translocations are also found in adipose tissue tumours (lipomas) and very rarely in bone and soft tissue chondromas. Upregulation of HMGA2 promotes tumorigenesis in adipose tissue (Thies et al., 2014). Fusion partners of HMGA2 in lipomas include PPAP2, ACKR3, EBF1, NFIB, LHFP and the most common one LPP (PANAGOPOULOS et al., 2015).

Probe specification

The REMBRANDT® HMGA2 break apart probe mix consists of a 175 kb probe distal from the HMGA2 break point region, and a 209 kb probe proximal from the HMGA2 break point region.

The proximal region is detected by green fluorescence (AF488) and the distal region is detected by orange fluorescent detection (AF555). The REMBRANDT® HMGA2 break apart FISH detection assay is able to detect translocation of the HMGA2 gene on chromosome 12, by means of direct *in situ* hybridization. The REMBRANDT® HMGA2 break apart probes are pre-mixed in a hybridization mixture (formamide, dextran sulphate and SSC) and are ready to use solutions.



Test principle

In a fluorescent *in situ* hybridization assay, a double stranded DNA probe labelled with a fluorochrome is used. The labelled DNA probe is diluted in a hybridization mixture. The hybridization mixture containing the DNA probe is added to the specimen. A co-denaturation will ensure that the genomic DNA and the probe DNA become single stranded. After denaturation, the probe DNA is able to hybridize to its complementary target sequences in the cells. In the REMBRANDT® HMGA2 break apart FISH detection assay, the fluorochrome is attached to the probe and the signals can be visualized directly by fluorescent microscopy after hybridization.

Reagents provided

Product name	Product number	Amount
Labelled probes (depending on size choice)		
REMBRANDT® HMGA2 break apart FISH probe mix	C825P.2030.05 or C825P.2030.10	Σ 5 T Σ 10 T
REMBRANDT® Pepsin powder	R011R.0000	1 g
REMBRANDT® Pepsin diluent	R018R.0000	15 ml
REMBRANDT® PanWash 4, 25X SSC	R025R.0000	4x 15 ml

REMBRANDT® Fluorescent Mounting medium	Z000R.0050	1 ml

Assay procedure

REMBRANDT® HMGA2 break apart FISH detection assay procedure for cytological specimen.

I. Incubate slides in pre-heated proteolytic work solution (prepare according to section 1.9 of Manual-FISH) (R011R.000 + R018R.000) at 37 ˚C (100 µg/ml) for 15 minutes followed by a brief rinsing in 0.01M HCl (1x 2 minutes) and subsequent rinses in PBS (2x 1 minute)

II. Flush wash slides in deionised water, followed by dehydration in graded ethanol series (ethanol 70%, 96%, 96%, 100%, 100%) 1 minute each and air-dry slides for 15 minutes

Do not treat more than 5 slides at the same time, because the temperature of the pre-heated solutions may drop dramatically, thus causing incomplete pre-treatment. Additionally, allow the slides to air-dry as recommended; otherwise sections will be lost.

III. Homogenize probe solution (C825P.2030.YY) a spin briefly. Apply 15 µl of probe solution to each specimen. Cover all specimens with a cover slip (avoid air bubbles). Denature slides on a 80 ˚C hotplate or other heating device for 3 minutes

Work in a pre-set order to ensure that all slides have been incubated at 80 ˚C for the exact same time. Do not denature more than 5 slides at the same time, the temperature of the heating device may drop dramatically, thus causing incomplete denaturation.

IV. Transfer the slides into a moist environment and incubate for 16 hours at 37 ˚C.

V. Remove coverslips by soaking the slides in PBS at room temperature

VI. Incubate the slides in diluted, pre-heated PanWash 4 (R025R.000) (prepare according to section 1.9 of Manual-FISH)

Do not incubate more than 5 slides at the same time in PanWash 4, the temperature of the PanWash 4 may drop dramatically, causing wrong stringency conditions.

VII. Incubate the slides in PBS at room temperature for 1 minute

VIII. Dehydrate the slides in graded ethanol series (70%, 96%, 96%, 100%, 100%) 1 minute each and air-dry the slides for 15 minutes (in the dark)

Mount the slides by applying mounting medium (Z000R.0050) and coverslip

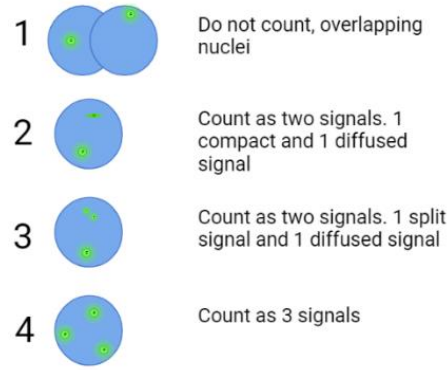
Interpretation of results

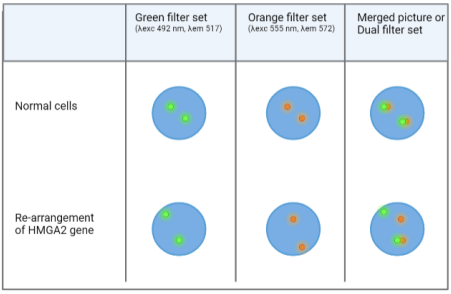
Hybridization of the REMBRANDT® HMGA2 break apart probes is viewed using a fluorescence microscope equipped with appropriate excitation and emission filters for orange detection: λ_{exc} 555 nm, λ_{em} 572 nm. Allowing visualization of orange fluorescent signal concentrated at the distal region in combination with green fluorescent signals representing the proximal region from the HMGA2 break point region. The fluorescently-stained green and orange loci of chromosome 12 stand out brightly against the general fluorescence of the nucleus.

The HMGA2 break apart FISH procedure enables observation of a possible detection of translocation of the HMGA2 gene on chromosome 12 within the nuclei.

Analyse the fluorescent signals in the interphase nucleus using a 40X or 63X magnification. Objectives with higher magnification (eg, 63X or 100X) should be used to verify or resolve questions about split or diffused signals. Enumerate at least 100 nuclei per slide for accurate analysis.

•Two signals in close proximity and approximately the same sizes but not connected by a visible link are counted as 2 signals.
•Count a diffuse signal as 1 signal if diffusion of the signal is contiguous and within an acceptable boundary.
•Two small signals connected by a visible link are counted as 1 signal.
•Count nuclei with 0 signals only if there are other nuclei with at least 1 signal present in the field of view. If the accuracy of the enumeration is in doubt, repeat the enumeration in another area of the slide.
•Do not enumerate nuclei with uncertain signals ('Marilyn S., 2017)





Other signal distribution may be observed in some abnormal samples which might result in a different signal pattern than described above. Unexpected signal patterns should be further investigated.

Performance characteristics

Analytical Sensitivity and Specificity

The analytical sensitivity and specificity were investigated within PanPaths analytical performance assessment. Precision was investigated for the REMBRANDT® HMGA2 break apart FISH detection assay and results are available upon request.

Analytical sensitivity

The analytical sensitivity was determined in three levels. The normal cut-off percentage was determined based on assessment of 200 individual nuclei in two samples of healthy interphase lymphocytes from peripheral blood. The beta inversion was used to determine the percentage of normal-cut off. For the noise-to-signal percentage, the noise and signal values were determined for 100 signals in interphase lymphocytes from peripheral blood of two independent samples. The differences between noise and signal were evaluated using a 95% confidence interval. For the hybridization efficiency, 200 individual nuclei were assessed for the presence of FISH signals.

Performance characteristic	Outcome
Normal cut-off percentage	11%
Noise-to-signal cut-off percentage	34%
Hybridization efficiency	99%

Analytical specificity

The analytical specificity was determined in two levels. The theoretical specificity was determined by sequencing analysis of the probe DNA and mapping on Hg38. The practical specificity was determined by assessing the hybridization pattern in metaphase chromosomes of interphase lymphocytes from peripheral blood.

Performance characteristic	Outcome
Theoretical specificity	Mapped on chromosome 12 the locus q14.3, distal and proximal from the HMGA2 break point region
Practical specificity	100%

Limitations of Procedure

i) The REMBRANDT® HMGA2 break apart FISH detection assay is solely applicable for the detection of a translocation of the HMGA2 gene, which may be present in cell preparations (cytological specimen i.e. interphase lymphocytes from peripheral blood samples).

ii) Either human tissue sections or human cytological preparations may be used. Samples must be fixed in buffered formalin or alcohol. In tissue sections are required, the sections should be prepared in a 4 µm thickness. Furthermore, the tissues should be glued to the glass slides with a bio-adhesive (e.g. organ silane), dried at room temperature, subsequently dried at 37 °C overnight and lastly completely deparaffinized in xylene and alcohol series and air dried.

iii) Cytological specimen should be prepared as required by the user, fixed with cytological fixation agent, rinsed in distilled water prior to the ISH procedure and air dried.

iv) Many factors can influence the performance of the ISH procedure. Failure in detection can be due to i.e. improper sampling, handling, the time lapse between tissue removal and fixation, the size of the tissue specimen in the fixation medium, the fixation time, processing fixed tissue, the thickness of the section, the bio-adhesive on the slide, deparaffinisation procedure, incubation times, proteolytic pre-treatment, detection reagents, incubation temperatures and interpretation of results.

v) The performance of the ISH procedure is also affected by the sensitivity of the method and the presence of the HMGA2 gene. In case the limit of the sensitivity is reached a false negative reaction may be the result.

vi) The REMBRANDT® HMGA2 break apart FISH detection assay results should not be relied on in case the sampling, sampling method, sample quality, sample preparation, reagents used, controls and procedure followed are not optimal or as described the working protocols.

vii) The clinical interpretation of the results should not be established on the basis of a single test result. A precise diagnosis should take into consideration clinical history as well as data obtained from other molecular test (i.e. WGS).

viii) Therapeutic considerations based on the result of this test alone should not been taken. Results should be verified by other traditional diagnostic methods such as but not limited to clinical history, symptoms, as well as morphological data.

ix) The medical profession should be aware of risks and factors influencing the fluorescent signal intensity while interpretating the test result. Microscopy settings might influence the signal intensity and/or interpretation.

x) Laboratory personnel performing the test should be trained and knowledgeable to be able to interpret the test results.

Storage and handling

Store kit and its contents at 2-8°C. Store the dissolved and aliquoted reagents at recommended temperatures. When used and stored as indicated, the kit is stable until the expiry date printed on the box.

Product	Product number	Storage conditions
REMBRANDT® HMGA2 break apart FISH probe mix	C825P.2030	2-8 ˚C
REMBRANDT® Pepsin powder	R011R.0000	Powder: 2-25˚C, ambient temperature Dissolved: -20˚C
REMBRANDT® Pepsin diluent	R018R.0000	Concentrated solution and diluted: 2-25˚C, ambient temperature
REMBRANDT® PanWash 4, 25X SSC	R025R.0000	Concentrated solution and diluted: 2-25˚C, ambient temperature
REMBRANDT® Fluorescent mounting medium	Z000R.0050	2-8 ˚C

Hazard statements

H315 - Causes skin irritation
H319 - Causes serious eye irritation
H351 - Suspected of causing cancer
H360D - May damage the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary Statements

P202 - Do not handle until all safety precautions have been read and understood
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P302 + P352 - IF ON SKIN: Wash with plenty of water and soap
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P308 + P313 - IF exposed or concerned: Get medical advice/attention
P362 + P364 - Take off contaminated clothing and wash it before reuse
P405 - Store locked up

Additional information

Product in combination with other devices

The REMBRANDT® DNA probes are intended for stand-alone usage. The assay is intended to be used in combination with standard cytological preparation methods, hot plate(s), stove(s), incubation device(s), water bath(s), temperature and incubation time control(s), proteolytic-, detection- and other reagents (not supplied with this reagent) and a microscope. The combination has been tested and validated. Since the standard cytological preparation methods, hot plate(s), stove(s), incubation device(s), water bath(s), temperature controls, incubation time control(s) and other not supplied reagents such as but not limited to proteolytic reagents, detection reagents and a microscope is not combined with the device as a product, conformity with the essential requirements is not applicable. Assay validation criteria are mentioned in *'Interpretation of the Results'* and are also depending on clinical state of the sample, which may influence the validation criteria.

For additional information regarding the REMBRANDT® assays, a manual is included which specifies the following subjects:

- Controls
- Materials required but not included
- Storage and shelf-life
- Performance precautions
- Preparations of reagents
- Specimen collection
- Quality control
- Trouble shooting guide

Technical assistance

For technical assistance regarding the products performance, please contact info@panpath.nl or call +31 495499090. Visit our website for reprints of datasheets or additional documentation. www.panpath.nl

Literature list

'Marilyn S., A. 'Margaret J. , B. ' H. J. , L. (2017). *The AGT Cytogenetics Laboratory Manual* (4th Edition).

PANAGOPOULOS, I., GORUNOVA, L., BJERKEHAGEN, B., LOBMAIER, I., & HEIM, S. (2015). The recurrent chromosomal translocation t(12;18)(q14~15;q12~21) causes the fusion gene HMGA2-SETBP1 and HMGA2 expression in lipoma and osteochondrolipoma. *International Journal of Oncology*, *47*(3), 884–890. https://doi.org/10.3892/ijo.2015.3099

Stenman, G., Andersson, M. K., & Andren, Y. (2010). New tricks from an old oncogene. *Cell Cycle*, *9*(15), 3058–3067. https://doi.org/10.4161/cc.9.15.12515

Thies, H. W., Nolte, I., Wenk, H., Mertens, F., Bullerdiek, J., & Markowski, D. N. (2014). Permanent activation of HMGA2 in lipomas mimics its temporal physiological activation linked to the gain of adipose tissue. *Obesity*, *22*(1), 141–150. https://doi.org/10.1002/oby.20137

Disclaimer: This document is valid until the product expiry on the kit label

DATA SHEET-V2
REMBRANDT® HMGA2 BREAK APART ISH DETECTION
RESEARCH USE ONLY (RUO)

RUO

Pan Path

Ref		
C825K.0199.05	Σ	5 T
C825K.0199.10	Σ	10 T

Intended use

I. The REMBRANDT® HMGA2 break apart ISH detection assay is for research use only, and is intended for the detection of a translocation of the HMGA2 gene on chromosome 12, locus q14.3, in fixed cells.

II. The REMBRANDT® HMGA2 break apart ISH detection assay kit is a qualitative assay for the detection of a translocation of the HMGA2 gene on chromosome 12, locus q14.3. A clinical diagnosis should not be established based on the performance of this test.

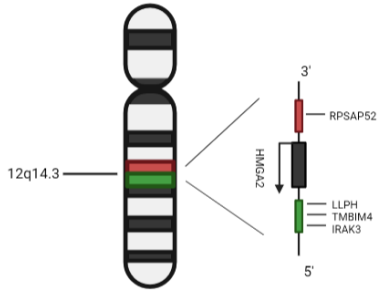
III. The intended users are qualified laboratory employees in cytology and/or pathology. The product is intended for professional use.

Clinical relevance

The HMGA2 break apart probe is intended to identify rearrangements of the HMGA2 region, which lies on chromosome 12 at location 12q14.3. High Mobility Group AT-hook 2, or HMGA2, belongs to the High Mobility Group (HMG) protein gene family. The gene encodes for proteins that arrange the assembly of nucleoprotein complexes and play an important role in gene transcription, recombination and chromatin structure. HMGA2 is also known as a proto-oncogene in PA (pleomorphic adenoma) and CA ex-PA (carcinoma ex pleomorphic adenoma). Fusion partners include NFIB, WIF1 and FHIT which influence the activation of the expression of HMGA2. Target genes include the cell-cycle regulators CCNA1 and CCNB2 (Stenman et al., 2010). HMGA2 translocations are also found in adipose tissue tumours (lipomas) and very rarely in bone and soft tissue chondromas. Upregulation of HMGA2 promotes tumorigenesis in adipose tissue (Thies et al., 2014). Fusion partners of HMGA2 in lipomas include PPAP2, ACKR3, EBF1, NFIB, LHFP and the most common one LPP (PANAGOPOULOS et al., 2015).

Probe specification

The REMBRANDT® HMGA2 break apart probe mix consists of a 175 kb probe distal from the HMGA2 break point region, and a 209 kb probe proximal from the HMGA2 break point region. The proximal probe is conjugated to biotin and the distal probe is conjugated to digoxigenin. The REMBRANDT® HMGA2 break apart ISH detection assay is able to detect a translocation of the HMGA2 gene on chromosome 12, locus q14.3, by means of *in situ* hybridization. The REMBRANDT® HMGA2 break apart probes are pre-mixed in a hybridization mixture (formamide, dextran sulphate and SSC) and are ready to use solutions.



Test principle

In an *in situ* hybridization assay, a double stranded DNA probe labelled with a hapten is used. The labelled DNA probe is diluted in a hybridization mixture. The hybridization mixture containing the DNA probe is added to the specimen. A co-denaturation will ensure that the genomic DNA and the probe DNA become single stranded. After denaturation, the probe DNA is able to hybridize to its complementary target sequences in the cells. In the REMBRANDT® HMGA2 break apart ISH detection assay, the haptens are attached to the probe and the signals can be visualized after detection by corresponding antibodies by fluorescent or brightfield microscopy.

Reagents provided

Product name	Product number	Amount
Labelled probes (depending on size choice)		
REMBRANDT® HMGA2 break apart ISH probe mix	C825P.0199.05 or C825P.0199.10	Σ 5 T / Σ 10 T
REMBRANDT® Pepsin powder	R011R.0000	1 g
REMBRANDT® Pepsin diluent	R018R.0000	15 ml

REMBRANDT® PanWash 4, 25X SSC	R025R.0000	4x 15 ml
REMBRANDT® Pre-treatment solution	R026R.0000	15 ml

Assay procedure

REMBRANDT® HMGA2 break apart ISH detection assay procedure for cytological specimen and FFPE tissue sections.

I. Specimen collection: for a detailed description of the specimen collection for cytological specimen or FFPE tissue sections see section 2.1 Specimen collection of the Manual ISH.

II. For FFPE tissue sections, after dewaxing, place slides in jar with pre-treatment solution (R026R.0000) in microwave set at i.e. 900W and incubate up until boiling. Subsequently, reset microwave at 180W and incubate for 10 minutes, followed by cooling down for 20 minutes at room temperature. Flush wash slides in deionised water.

III. Incubate slides in pre-heated proteolytic work solution (prepare according to section 1.9 and 1.10 of Manual ISH (R011R.000 + R018R.000) at 37 ˚C. Paraffin-embedded sections (1.25 mg/ml) or cytological specimen (100 µg/ml) for 15 minutes.

IV. Flush wash slides in deionised water, followed by dehydration in graded ethanol series (ethanol 70%, 96%, 96%, 100%, 100%) 1 minute each and air-dry slides for 15 minutes.

Do not treat more than 5 slides at the same time, because the temperature of the pre-heated solutions may drop dramatically, thus causing incomplete pre-treatment. Additionally, allow the slides to air-dry as recommended; otherwise sections will be lost.

V. Homogenize probe solution (C825P.0199.YY) and spin briefly. Apply 10-15 µl of probe solution to each specimen. Cover all specimens with a cover slip (avoid air bubbles). Denature slides on a 80 ˚C hotplate or other heating device, 3 minutes for cytological specimen and 10 minutes for FFPE tissue sections.

Work in a pre-set order to ensure that all slides have been incubated at 80 ˚C for the exact same time. Do not denature more than 5 slides at the same time, the temperature of the heating device may drop dramatically, thus causing incomplete denaturation.

VI. Transfer the slides into a moist and dark environment and incubate for 16 hours at 37 ˚C.

VII. Remove coverslips by soaking the slides in PBS at room temperature.

VIII. Incubate the slides in diluted, pre-heated PanWash 4 (R025R.0000) (prepare according to section 1.9 of Manual-ISH). For cytological specimen and FFPE tissue sections, 2x 5 minutes in 2x SSC at 42 ˚C. For cytological specimen, subsequently incubate 2x 5 minutes in 0.1x SSC at 61 ˚C.

Do not incubate more than 5 slides at the same time in PanWash 4, the temperature of the PanWash 4 may drop dramatically, causing wrong stringency conditions.

IX. Appropriate detection system should be evaluated by the end-user. Recommended detection systems are listed below

Digoxigenin detection	Biotin detection
R003R.0000 REMBRANDT® Sheep aDig-AP conjugate	R041R.0000 REMBRANDT® Goat aBio-AP Fab conjugate
R004R.0000 REMBRANDT® Sheep aDig-HRP conjugate	R042R.0000 REMBRANDT® Goat aBio-HRP Fab conjugate

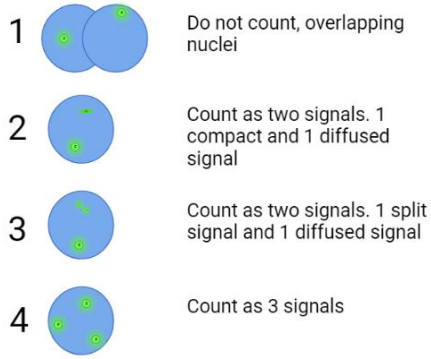
AP detection	HRP detection
R008R.0000 REMBRANDT® NBT/BCIP substrate	R007R.0000 REMBRANDT® AEC substrate + R010R.0000 REMBRANDT® AEC buffer

Interpretation of results

Hybridization of the REMBRANDT® HMGA2 break apart probes is viewed using a fluorescence of brightfield microscope equipped with appropriate excitation and emission filters Allowing visualization of signals concentrated at the proximal region in combination with signals representing the distal region from the HMGA2 gene, detecting the HMGA2 gene on chromosome 12, locus q14.3. The HMGA2 break apart ISH procedure enables observation of a possible detection of translocation of the HMGA2 gene on chromosome 12 within the nuclei.
Analyse the signals in the interphase nucleus using a 40X or 63X magnification. Objectives with higher magnification (eg, 63X or 100X) should be used to verify or resolve questions about split or diffused signals. Enumerate at least 100 nuclei per slide for accurate analysis.

•Two signals in close proximity and approximately the same sizes but not connected by a visible link are counted as 2 signals.
•Count a diffuse signal as 1 signal if diffusion of the signal is contiguous and within an acceptable boundary.

•Two small signals connected by a visible link are counted as 1 signal.
•Enumerate the number of nuclei with 0, 1, 2, 3, 4, or >4 signals. Count nuclei with 0 signals only if there are other nuclei with at least 1 signal present in the field of view. If the accuracy of the enumeration is in doubt, repeat the enumeration in another area of the slide.
•Do not enumerate nuclei with uncertain signals



Performance characteristics

The REMBRANDT® HMGA2 break apart ISH detection assay was analytically validated for the REMBRANDT® HMGA2 break apart FISH detection. The results of the direct fluorescent assay are shown. However, for the REMBRANDT® HMGA2 break apart ISH detection assay, the detection system may influence the performance characteristics and the REMBRANDT® HMGA2 break apart detection assay in combination with different detection systems should be evaluated carefully by the end-user.

Analytical sensitivity

The analytical sensitivity was determined in three levels. The normal cut-off percentage was determined based on assessment of 200 individual nuclei in two samples of healthy interphase lymphocytes from peripheral blood. The beta inversion was used to determine the percentage of normal-cut off. For the noise-to-signal percentage, the noise and signal values were determined for 100 signals in interphase lymphocytes from peripheral blood of two independent samples. The differences between noise and signal were evaluated using a 95% confidence interval. For the hybridization efficiency, 200 individual nuclei were assessed for the presence of ISH signals.

Performance characteristic	Outcome
Normal cut-off percentage	11%
Noise-to-signal cut-off percentage	34%
Hybridization efficiency	99%

Analytical specificity

The analytical specificity was determined in two levels. The theoretical specificity was determined by sequencing analysis of the probe DNA and mapping on Hg38. The practical specificity was determined by assessing the hybridization pattern in metaphase chromosomes of interphase lymphocytes from peripheral blood.

Performance characteristic	Outcome
Theoretical specificity	Mapped on chromosome 12 the locus q13.4, distal and proximal from the HMGA2 gene
Practical specificity	100%

Limitations of Procedure

i) The REMBRANDT® HMGA2 break apart ISH detection assay is solely applicable for the detection of a translocation of the HMGA2 gene, which may be present in cell preparations (cytological specimen i.e. interphase lymphocytes from peripheral blood samples).

ii) Either human tissue sections or human cytological preparations may be used. Samples must be fixed in buffered formalin or alcohol. In tissue sections are required, the sections should be prepared in a 4 µm thickness. Furthermore, the tissues should be glued to the glass slides with a bio-adhesive (e.g. organ silane), dried at room temperature, subsequently dried at 37 °C overnight and lastly completely deparaffinized in xylene and alcohol series and air dried.

iii) Cytological specimen should be prepared as required by the user, fixed with cytological fixation agent, rinsed in distilled water prior to the ISH procedure and air dried.

iv) Many factors can influence the performance of the ISH procedure. Failure in detection can be due to i.e. improper sampling, handling, the time lapse between tissue removal and fixation, the size of the tissue specimen in the fixation medium, the fixation time, processing fixed tissue, the thickness of the section, the bio-adhesive on the slide, deparaffinisation procedure, incubation times, proteolytic pre-treatment, detection reagents, incubation temperatures and interpretation of results.

v) The performance of the ISH procedure is also affected by the sensitivity of the method and the presence of the HMGA2 gene. In case the limit of the sensitivity is reached a false negative reaction may be the result.

vi) The REMBRANDT® HMGA2 break apart ISH detection assay results should not be relied on in case the sampling, sampling method, sample quality, sample preparation, reagents used, controls and procedure followed are not optimal or as described the working protocols.

vii) The medical profession should be aware of risks and factors influencing the fluorescent signal intensity while interpretating the test result. Microscopy settings might influence the signal intensity and/or interpretation.

viii) Laboratory personnel performing the test should be trained and knowledgeable to be able to interpret the test results.

Storage and handling

Store kit and its contents at 2-8°C. Store the dissolved and aliquoted reagents at recommended temperatures. When used and stored as indicated, the kit is stable until the expiry date printed on the box.

Product	Product number	Storage conditions
REMBRANDT® HMGA2 break apart ISH probe mix	C825P.0199.YY	2-8 °C
REMBRANDT® PanWash 4, 25X SSC	R025R.0000	Concentrated solution and diluted: 2-25°C, ambient temperature
REMBRANDT® Pepsin powder	R011R.0000	Powder: 2-25°C, ambient temperature Dissolved: -20°C
REMBRANDT® Pepsin diluent	R018R.0000	Concentrated solution and diluted: 2-25°C, ambient temperature
REMBRANDT® Pre-treatment solution	R026R.0000	Concentrated solution and diluted: 2-25°C, ambient temperature

Hazard statements

H315 - Causes skin irritation
H319 - Causes serious eye irritation
H351 - Suspected of causing cancer
H360D - May damage the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary Statements

P202 - Do not handle until all safety precautions have been read and understood
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P302 + P352 - IF ON SKIN: Wash with plenty of water and soap
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P308 + P313 - IF exposed or concerned: Get medical advice/attention
P362 + P364 - Take off contaminated clothing and wash it before reuse
P405 - Store locked up

Additional information

Product in combination with other devices

The REMBRANDT® DNA probes are intended for stand-alone usage. The assay is intended to be used in combination with standard cytological preparation methods, hot plate(s), stove(s), incubation device(s), water bath(s), temperature and incubation time control(s), proteolytic-, detection- and other reagents (not supplied with this reagent) and a microscope. The combination has been tested and validated. Since the standard formalin fixed, paraffin embedded tissue blocks, standard tissue freezing, tissue sectioning (microtome), standard cytological preparation methods, hot plate(s), stove(s), incubation device(s), water bath(s), temperature controls, incubation time control(s) and other not supplied reagents such as but not limited to proteolytic reagents, detection reagents and a microscope is not combined with the device as a product, conformity with the essential requirements is not applicable. Assay validation criteria are mentioned in *'Interpretation of the Results'* and are also depending on the target load, which may influence the validation criteria.

For additional information regarding the Rembrandt® assays, a manual is included which specifies the following subjects:

- Controls
- Materials required but not included
- Storage and shelf-life
- Performance precautions
- Preparations of reagents
- Specimen collection
- Quality control
- Trouble shooting guide

Technical assistance

For technical assistance regarding the products performance, please contact info@panpath.nl or call +31 495499090. Visit our website for reprints of datasheets or additional documentation. www.panpath.nl

Literature list

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