

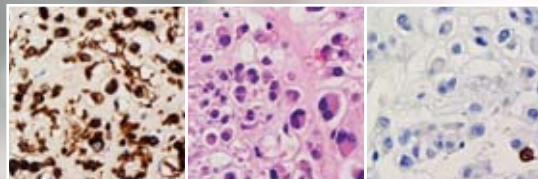
2008

Issue
01

Pathology & Diagnostics Newsletter
European Edition

reSOLUTION

- Immunofluorescence
- Antibodies
- In vitro Fertilisation
- Documentation & Archiving



Dear Reader,

The third issue of our reSOLUTION Newsletter for Pathology & Diagnostics covers an extremely broad range of topics. One of them is autoimmune diseases. Neither all the different degrees nor the causes for the wrong programming of the immune system have been researched in detail. Indirect immunofluorescence for detecting antinuclear antibodies is one of the most important methods in the clinical diagnosis of autoimmune diseases.

In *in vitro* fertilisation, stereomicroscopes are found in every laboratory. Leica Microsystems has designed an innovative series of products offering new standards of resolution and zoom imaging for this application.

Immunohistochemistry has long become an established technique in clinical diagnostics. The research and development of new, better and better antibodies is an important business area of Leica Microsystems' Biosystems Division. Join us in taking a look behind the scenes of our Newcastle facility, home of our Novocastra™ brand. In an interview, two scientists tell us how they develop new antibodies at Novocastra™.

A topic that is discussed again and again in pathology laboratories is standardisation. As cancer therapeutics becomes ever more patient-specific and the portfolio of tissue-based diagnostic assays develops, standardisation in histopathology becomes more important than ever. To illuminate the many facets of this subject, we have published a Special Edition which can be downloaded from our website.



Anja Schué
Corporate Communications



Giancarlo Migliore
European Marketing Director

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When the Body is its Own Worst Enemy

All-in-One Solutions for Detection of Antinuclear Antibodies

When the immune system starts fighting its own body, the autoimmune disease Lupus erythematoses may be the culprit. It is one of the common autoimmune diseases that can affect an organ, an organ system or, ultimately, the whole body. It is difficult to say exactly how many autoimmune diseases exist. Some diseases are suspected of having autoimmune causes, but it has not yet been possible to supply proof. The current list contains well over 60 diseases.

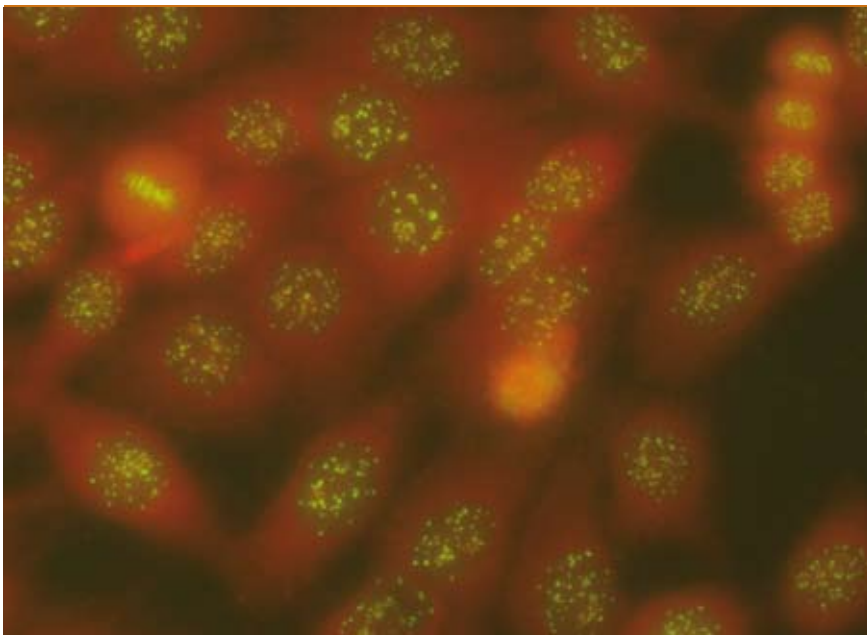
Antinuclear antibodies indicate autoimmune diseases

As many autoimmune diseases are difficult to identify, laboratory tests are helpful for confirming the clinical diagnosis. The most commonly used assay is the determination of antinuclear antibodies (ANAs) by indirect immunofluorescence analysis (IFA). ANAs indicate the possible presence of autoimmunity and help the pathologist to specify the diagnosis and initiate appropriate therapy. ANAs can also be found in patients with conditions that

The most common autoimmune diseases

- Rheumatoid arthritis
- Lupus erythematoses
- Diabetes mellitus type I
- Hashimoto thyroiditis
- Morbus Graves
- Coeliac disease
- Morbus Crohn
- Colitis ulcerosa
- Multiple sclerosis
- Guillian-Barré syndrome
- Scleroderma
- Sjögren's syndrome
- Goodpasture's syndrome
- Morbus Addison
- Wegner's granulomatosis
- Primary biliary sclerosis
- Sclerosing cholangitis
- Autoimmune hepatitis
- Polymyalgia rheumatica
- Raynaud's disease

Fig. 1: Hep-2 D1933 H+:
HEp-2 cells positive to Anti Centromere
Antibodies



are not considered classic autoimmune diseases, such as chronic infections and cancer.

Detection of ANAs requires special slides with sections of specific mouse organs (i.e. stomach, liver, kidney or other, depending on the type of disease to be detected) or slides coated with special cellular lines (Hep-2 or HeLa). The serum of the patient reacts with this substrate, and by adding an anti-human secondary antibody that conjugates with fluorescein isothiocyanate (FITC) this reaction is visible via fluorescence microscopy. Moreover, antibodies can be detected by a direct reaction between the serum and the pathogenic agent (e.g. virus, bacteria, etc). In this case the slides are coated with specific inactivating substrates for each pathogenic agent.

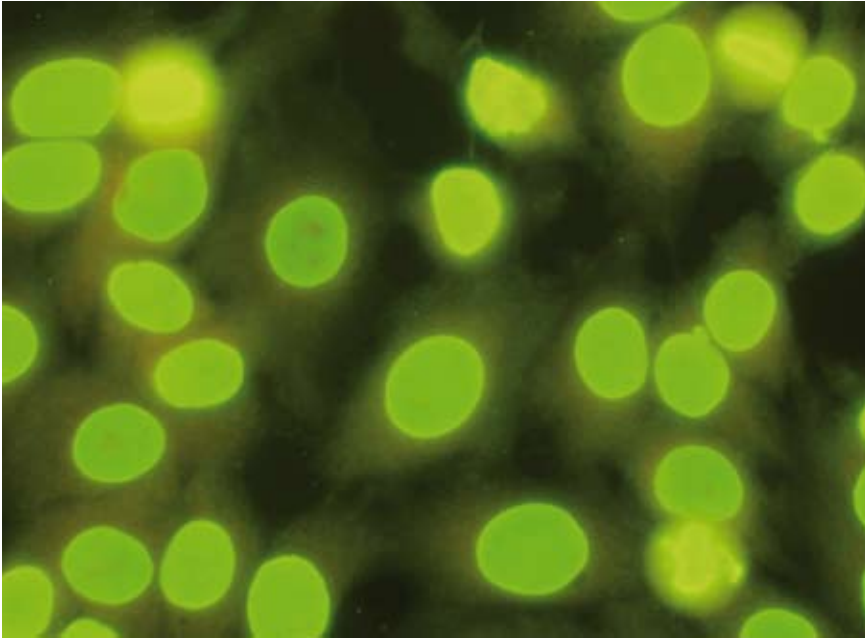


Fig. 2: Hep-2 D1933 H+:
HEp-2 cells positive to antinuclear anti-
bodies – homogeneous pattern

All-in-one solution for immunofluorescence

For IFA analysis all reagents can be purchased as ready-to-use kits from companies that supply diagnostic products for pathology labs. Together with two leading Italian vendors – Dasit S.p.A. and Bouty S.p.A. (Technogenetics) – Leica Microsystems is going a step further to offer users a genuine all-in-one solution. The two companies have put together an application package containing all the necessary components for IFA: a microscope with fluorescence axis, a camera, documentation and archiving software – from Leica Microsystems – and reagents.

Positive user feedback

Dasit and Bouty Technogenetics have been extremely successful with this all-in-one solution. However, the most important result of the cooperation is the positive feedback of the customers, who are particularly impressed by the quality of the microscope images and the easy and ergonomic handling of IFA. Even laboratory staff with little experience of microscopic analysis are able to use the system correctly within a surprisingly short time, as the system solution not only has an extremely user-friendly design, but fits seamlessly into the laboratory workflow.

Comments from Dasit and Bouty Managers

“After various installations we are really satisfied and enthusiastic about the application support offered by Leica Microsystems. The support received during the internal training was very efficient and has been highly appreciated by our Application Specialists and Sales Representatives.”

“For correct interpretation of ANA positive detections, it is very important to characterise and identify the right “pattern” of the fluorescence distribution, because each pattern corresponds to a different type of disease. With the Leica Microsystems solution we optimised the performance of our IFA reagents, improved the definition of the fluoroscopic pattern and took a big step forward in facilitating clinical diagnosis.”



Economic Microscope System Solution for Immunofluorescence

To provide optimised instrumentation for Immunofluorescence Diagnostics, Leica Microsystems offers a cost effective microscope system solution that consists of a Leica Digital Microscope Leica DM1000 or DM2000 with fluorescence axis and FITC filter cube. An optional LED illumination for fluorescence is also available.

In addition the system can be equipped with a Leica DFC420 digital colour camera for fast and convenient image acquisition. Leica IM or Leica Application Suite (LAS) offer efficient tools for ensuring reliable documentation and image analysis as well as a powerful database for storing every single diagnosis and printing medical reports.

Novocastra™ Antibodies

From Concept to Cancer Diagnosis

Dr Kenneth Mitchell, Leica Microsystems, Biosystems Division

Newcastle upon Tyne – this lively town in Northern England is not only famous for its culture, but it has been the base for the developer and manufacturer of antibodies and other reagents of the brand, Novocastra™. “Novocastra” is based upon the Latin name for the city of Newcastle and was the name given to the original company founded by Prof C. Wilson Horne. The company grew and in 2003 was integrated into Vision Biosystems where its products have continued to make an impact in the immunohistochemistry diagnostic market.

Today, Novocastra™ forms an important part of the overall histology range of Leica Microsystems’ Biosystems Division. Reagents are developed in-house under strict regulatory requirements to deliver clinically useful results in immunohistochemistry. Novocastra™ has many antibody milestones etched into its history that have found a place in the daily arsenal of antibodies used by pathologists in their laboratories. Such milestones have included the

first monoclonal antibody to work in formalin-fixed, paraffin-embedded (FFPE) tissue for Anti-CD4 Clone 1F6 and Anti-CD23 Clone 1B12 (1996) and the world’s first and still the only clones to work in FFPE tissue for Anti-CD10 clone 56C6 (1998), Anti-CD11c clone 5D11 (2006), and Anti-CD33 clone PWS44 (2007).

To gain further insight into the development of Novocastra™ antibodies, two scientists, Dr Mark Rees, Molecular Biology Manager, and Dr Nigel Piggett, Principal Development Scientist, both of Leica Microsystems’ Biosystems Division, explain what it takes for a company to deliver success in the form of clinically significant antibody reagents.

How do you choose which antibody to make next?

Rees: For our selection process, obtaining the “Voice of our Customer (VOC)” is crucial. By con-

Leica Biosystems, Newcastle Ltd. in UK, formerly Novocastra™ Laboratories Ltd.



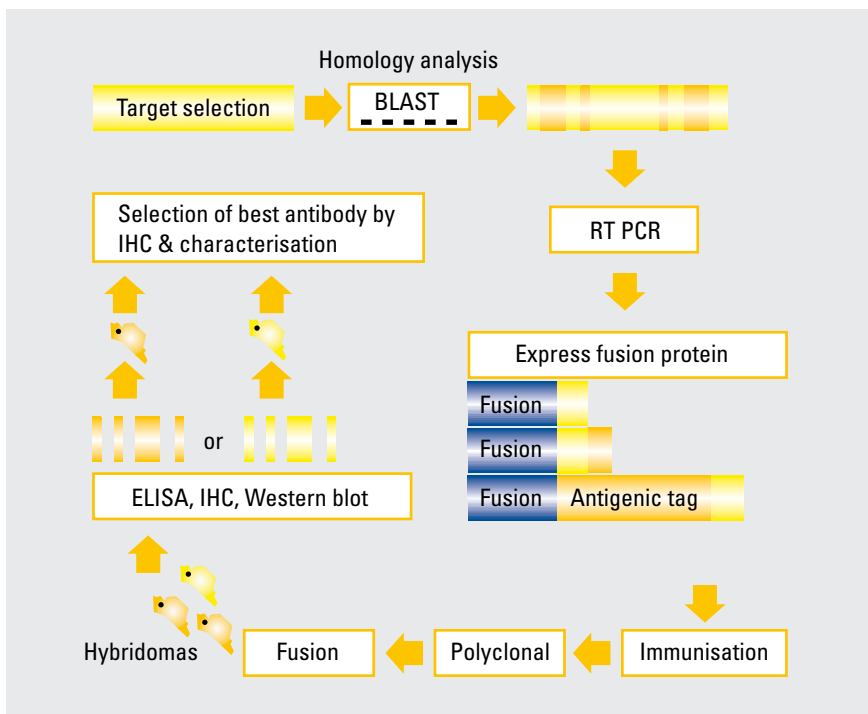


Fig. 1: Novel antibody development strategies

ducting a VOC exercise we are able to obtain valuable input from the market, forge collaborative links with pathologists and obtain the data necessary for reagent design and development. We rely upon data within the current scientific literature and also upon feedback from our customers, through marketing and our network of Key Opinion Leaders (KOL) in Pathology.



Dr Mark Rees, Molecular Biology Manager, Leica Microsystems, Biosystems Division

So how are they designed?

Rees: Antigen design and the selection of an appropriate target region is probably the most important step in antibody development. This determines the level of antigen solubility, immunogenicity and specificity of the monoclonal antibody produced. When developing an epitope-specific antibody, immunising proteins can either be made using synthetic chemical processes or produced via recombinant protein technologies using the encoding genes. Our scientists tend to favour the latter approach, producing recombinant protein and including as large a target region as possible. This maximises the probability of producing a robust monoclonal antibody suitable for use on FFPE tissue.



The antigen design process involves several important steps (Fig. 1). The first step in the design process is the homology analysis where we assess the target for regions of similarity to other proteins. We identify either the region to avoid or the region(s) to produce screening antigens to help select for those hybridomas producing antibody specific for our target. Once a decision on the target region has been made, we then design DNA primers specific to the encoding gene sequence to facilitate the amplification of the gene. The amplified genes are then transferred to a bacterial protein expression system where the protein is expressed and purified by means of column chromatography to produce soluble immunogen.

For any given target, we can produce a number of proteins that can either be used as an immunogen

or a screening protein in ELISA and Western blot validation for any antibody produced. To maximise our success rate, we have developed a series of antigenic fusion tags to enhance immunogenicity of our antigens.

What are the next steps to develop an antibody for commercial diagnostic utility?

Piggott: Firstly we have to identify that the mouse has responded to the immunogen by testing a sample of the mouse serum by IHC on FFPE tissue and by Western blot. A positive result is indicated when the mouse has responded to the protein of interest by giving the correct staining pattern on tissue and when it recognises a protein of the correct molecular weight by blot. Five days prior to fusion, we would give that mouse an intravenous boost of antigen and a somatic cell fusion is carried out similar to that first described by Köhler and Milstein (1975). This process involves the fusion of antibody-secreting murine splenocytes to murine myeloma cells to give a hybridoma cell with immortal properties and antibody-generating ability. By screening the many hybridoma cells generated (Fig. 2), we are able to select for the best antibody for use in FFPE by immunohistochemistry. The next stage involves the stabilisation of the antibody-secreting properties of the hybridoma by growth in cell culture at which time we select hybridomas that grow well and continue to secrete the antibody of interest. Following this stabilisation, we screen the antibody produced on a range of normal and abnormal FFPE tissues obtained from ethically approved sources.

How do you ensure the quality of the reagents?

Piggott: All our research, development and manufacturing procedures comply with regional regulatory requirements. We perform a wide range of testing on the antibody to determine that it is the best performing, most sensitive and specific antibody that can be used both as a liquid concentrated antibody on the bench in manual staining and as a ready-to-use reagent for the Bond-max™ automated immunohistostainer. We have responded to the market by choosing an antibody that works in both settings. We also perform extensive stability experiments to determine that the product is stable as a liquid reagent and we produce multiple batches for manufacture and test each of these. Following this “in-house” assessment, we work closely with a number of independent pathologists who “road test” our antibodies on surgical pathology cases, alongside a competitor antibody, if one is available.

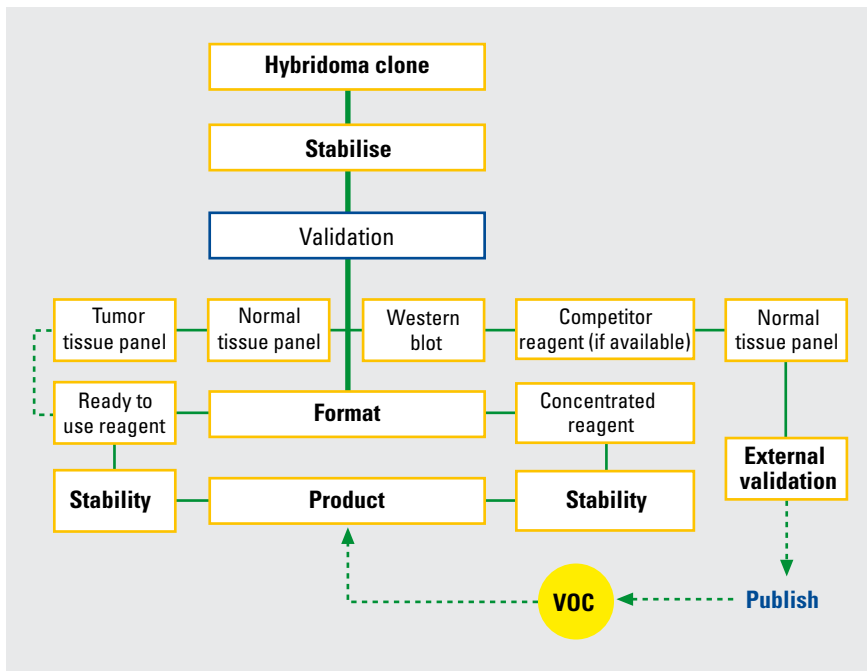


Fig. 2: Hybridoma validation

It is through such extensive screening on a wide range of tissues that have been prepared in numerous institutions that we are able to ensure only the best possible antibody, or clone, is selected for release as a Novocastra™ reagent. Coinciding with this antibody release, our collaborating KOL's may



Dr Nigel Piggott, Principal Development Scientist, Leica Microsystems, Biosystems Division

New reagent to DOG-1 for gastrointestinal tumours

Reagent Summary

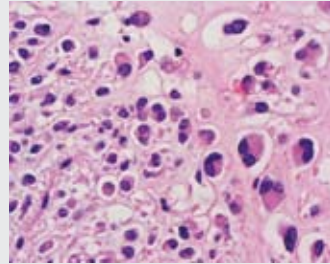
- Product code: NCL-L-DOG-1
- Mouse liquid monoclonal antibody – clone K9
- For *in vitro* diagnostic use (or research use only depending on local regulatory status)
- Available in 1 mL and 0.1 mL liquid concentrate

Features and Benefits

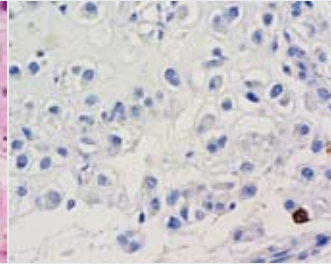
- Immunoreactivity for DOG-1 has been reported in 97.8% of scorable GISTs, including all C-KIT (CD117)-negative gastrointestinal tumours (GISTs)
- More cases detectable than with C-KIT antibodies
- Greater patient benefits
- Developed for formalin-fixed, paraffin-embedded (FFPE) sections in immunohistochemistry
- Liquid monoclonal antibody for ease of use
- Novocastra™-developed clone, trust in quality

A US patent exists that may restrict the use of antibodies raised to DOG-1 protein in USA.

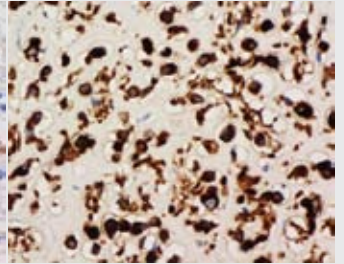
Hematoxylin & Eosin



CD117



DOG-1

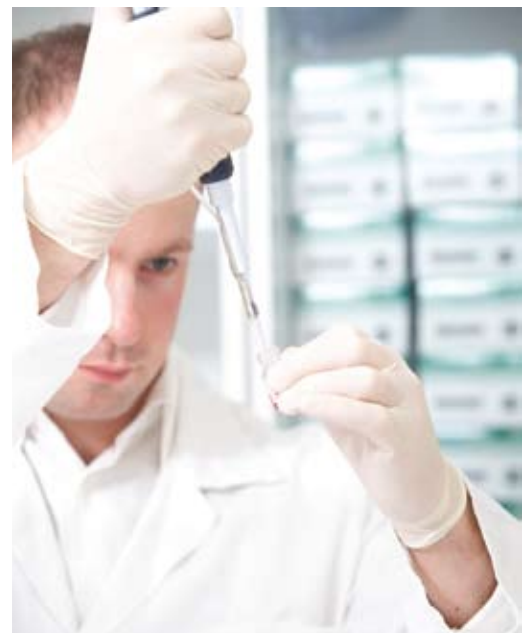


Human gastrointestinal stromal tumour (serial sections): (left to right) Hematoxylin & Eosin stain, negative immunohistochemical staining for CD117 antigen and positive immunohistochemical staining for DOG-1 using NCL-L-DOG-1 (Photographs courtesy of Prof Marco R. Novelli, UCL).

write a peer-reviewed article for publication. One recent success story has been the development of an antibody to the protein, DOG-1, over-expressed in a high percentage of gastrointestinal tumours or GISTs as described and evaluated by Professor Marco Novelli for the Journal of Histopathology (in press).

How long does this process take?

Piggott: The time taken variable depends upon a number of different factors. If we obtain the correct, successful response in the mouse, the project usually takes between 18–24 months to complete. If the project is very important we may have several strategies running in parallel. The longest we have worked on a project was seven years to produce the world's first CD33 that works in FFPE and that was described in the last edition of reSOLUTION. That project employed several serial strategies.



Acknowledgements

My sincere thanks to Drs Mark Rees and Nigel Piggott of Leica Microsystems, Biosystems Division for their participation in this discussion and also to Professor Marco Novelli and colleagues of Department of Histopathology, UCL, London, for their cooperation in supplying images of our antibody NCL-L-DOG-1, clone K9, and allowing the incorporation of some details from his article, currently in press with "The Journal of Histopathology".

References

1. Parfitt JR, Rodriguez-Justo M, Feakins R, Novelli MR. Gastrointestinal Kaposi Sarcoma: CD117 expression and the potential for misdiagnosis as gastrointestinal stromal tumour. The Journal of Histopathology (in press).

2. Miettinen M, Lasota J. Archives of Pathology and Laboratory Medicine 2006; 130: 1466–1478.
 3. Rubin B. Histopathology 2006; 48: 83–96.
 4. Köhler G, Milstein C. Nature 1975, Aug 7; 256 (5517): 495–497.

For more information on Novocastra™ reagents: Kenneth.Mitchell@leica-microsystems.com



The interview was conducted by: Dr Kenneth Mitchell, Product Manager, Leica Microsystems, Biosystem Division

Novolink™ Compact Polymer Detection System

for in vitro diagnostic use

Compact Polymer™ Technology

A unique compact shape reaches antigen sites unavailable to traditional long-chain polymers.

Exceptional sensitivity

Compact Polymer™ Technology carries a higher proportion of enzyme molecules to give exceptional sensitivity.

Universal detection

For use with both rabbit and mouse primary antibodies

Ready-to-use

Less "hands on" time, reagents provided in easy to use dropper bottles

Color coded

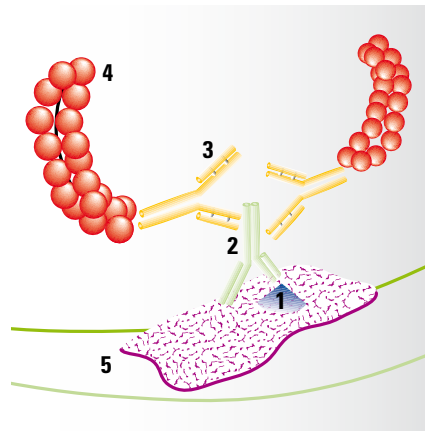
Reduce errors and cross-contamination

Sizes to suit laboratory workflow

Selection of kit sizes to suit requirements

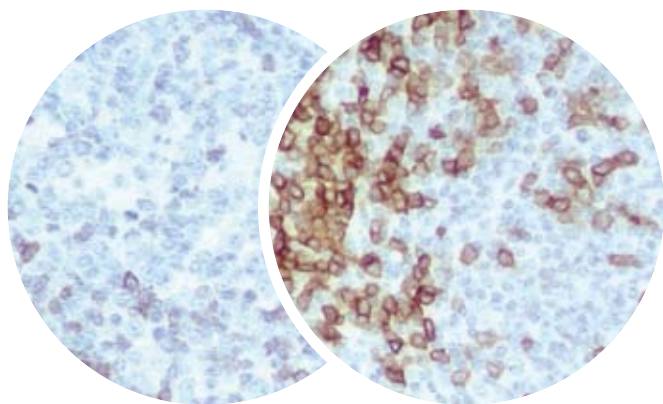
Product codes

- 1,250 tests – RE7280-K
- 500 tests – RE7150-K
- 250 tests – RE7140-K
- 50 tests – RE7290-K

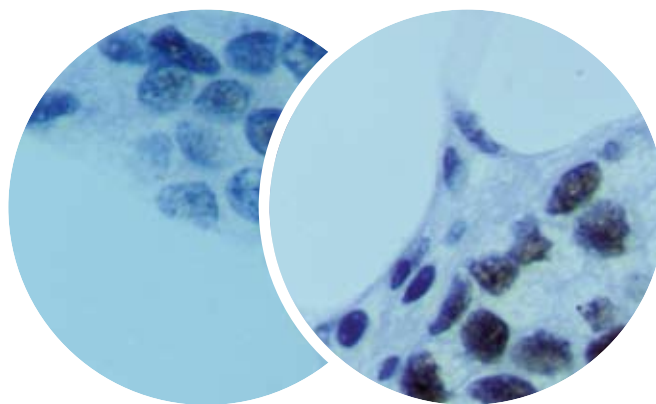


- 1) Antigen
- 2) Primary antibody
- 3) Secondary antibody
- 4) Enzyme
- 5) Tissue (e.g. lymph node)

Novocastra™ – ancillary reagents for immunohistochemistry



NCL-L-CD5-4C7 staining of formalin-fixed, paraffin-embedded tonsil (left: Competitor Polymer Detection System, right: Novolink™ Compact Polymer Detection System)



NCL-L-ER-6F11 staining of formalin-fixed, paraffin-embedded breast carcinoma (left: Competitor Polymer Detection System, right: Novolink™ Compact Polymer Detection System)

Novocastra™ Antibody Reagents, Epitope Retrieval Solutions, Antibody Diluent, all available from Leica Microsystems.

Focus on the Oocyte

Stereomicroscopy in IVF Applications

Since the world's first test tube baby nearly 30 years ago, reproduction medicine has become the only hope of having a child for many infertile couples, unless they decide to adopt. Several methods are available today, including intracytoplasmic sperm injection (ICSI) and intracytoplasmic morphologically selected sperm injection (IMSI), besides the classic method of *in vitro* fertilisation (IVF). Yet the prospects of success of artificial insemination depend on a great number of factors. Ultimately, obtaining an embryo with higher implantation potential not only relies on optimal culture conditions and transfer technology, but also optimal selection and therefore quality of the oocyte. To select oocytes after puncture, and also to select blastocysts for implantation, stereomicroscopes are used, as their 3D imaging capability makes them ideal for these examinations.



Decornisation or denudation phase

When the oocytes have been collected after the follicle puncture, the samples must be denuded, i.e. stripped of their granulosa cells. This delicate procedure requires a large working distance, so a high-quality stereomicroscope is needed. The free oocytes can then be observed and selected depending on their quality. If the ICSI (intracytoplasmic sperm injection) technique is used, the oocytes are isolated in order to

accomplish fecundation. For the classical IVF method, denudation takes place one day after puncture so that the pronuclei can be visualised. To perform a fecundation the collected oocytes are checked to determine their maturity and their morphological aspects.

Zygote observation phase

After fecundation, the zygotes are observed to check the number, the size and the locations of the pronuclei. The stereomicroscope is the main optical tool for visualising the development of the embryos – from the zygote to the blastocyst state. In case of extended culture, the check will take place at D5 or D6 (D0 = Day of puncture). As the microscope is intensively used in this phase, ergonomic design, reliability, and ease of use are crucial as well as high image quality in terms of resolution and depth of field. In addition, compatibility with various accessories is essential, e.g. ergotube, choice of different optics and eyepieces, heating stage, and cameras to visualise the sample image on a screen.

More information on Leica Microsystems' products for IVF applications:
Frederic.Ribay@leica-microsystems.com

Convincing quality

Dr Fernando Marina, Biologist at the CEFER Reproduction Institute, Barcelona, Spain:

"The high optical quality of the Leica Microsystems' stereomicroscopes has convinced us. Especially the zoom range from low to very high magnification helps us for selection and denudation of the oocytes after puncture. Today we are equipped with several Leica stereomicroscopes and a micromanipulation system."



The CEFER Reproduction Institute is one of the leading private, interdisciplinary medical centres for reproduction medicine in Spain. The Institute was set up in 1977 by Dr Simón Marina, who is the founder and president of the Spanish Andrology Association. The institute established the first human Semen Bank in Spain in 1977, and in 1993 the "Fundació pro donació d'òvuls" to help infertile women by providing them with donated eggs. The CEFER Reproduction Institute was the second in the world to develop and practice semen-washing techniques. These methods allow HIV-positive men to father children without infecting their female partners. The team consists of 80 specialists, including andrologists, gynaecologists, biologists, urologists and auxiliary staff.

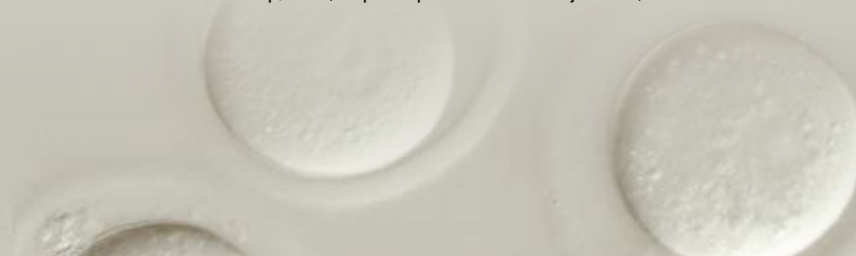


New Dimension in Stereomicroscopy

With the Leica M165C and M205C stereomicroscopes, Leica Microsystems has recently launched a revolutionary product series. The microscopes unite top performance zoom optics and resolution to produce brilliant images with outstanding richness of detail. Used for the first time in the Leica M205C, FusionOptics™ (patent pending) takes advantage of a neurological phenomenon: The left beam path produces great depth of field, while the right beam path provides a high-resolution image. The human brain itself then combines the best information from both channels, using it to compose an image whose resolution and depth of field have never been achieved in any stereomicroscope before.

The Leica M205C is the world's first stereomicroscope with a fully apochromatically corrected 20.5:1 zoom. In the zoom range from 0.78x to 16x, the resolution increases continuously up to 1,050 lp/mm (planapochromat objective 2x). The exceptional performance of Leica M205C is evident in its impressive maximum magnification of 1,280x. This new generation of objectives brings with it the absolutely largest working distances (planapochromat objective 1x: 61.5 mm) in stereomicroscopy.

With the Leica M165C, the classic design principles for stereomicroscopes were stretched to the very limits of optics. With a zoom range of 16.5:1 and a maximum resolution of 906 lp/mm (planapochromat objective 2x), this is the most powerful stereomicroscope in its class. The Leica M125 stereomicroscope completes the M series. It offers fully apochromatically corrected 12.5:1 optics, a zoom range from 0.8x to 10x, and a maximum resolution of 862 lp/mm (2x planapochromatic objective).



Bruno Hugon, Sales Manger BSD France/ Belgium (left), and Jean-Marc Renaud, Sales Representative Clinical France (right), present the Leica E24 stereomicroscope to the winner of the last contest: Laurence Fleurisse, staff member of the Histopathology Department at Hospital Saint Vincent, Lille, France.

Your Opinion Counts!

Dear Reader,

Please let us have your comments about this issue of reSOLUTION Newsletter for Pathology & Diagnostics. Not only will it provide us with valuable suggestions to improve the magazine; you will also get a chance to win a TomTom GO 720 T portable car navigation system with the latest and most complete maps of Western Europe. You can access the contest via the following link. Please enter your comments and your address:

www.leica-microsystems.com/EU-Pathology

The winner will be drawn from all complete entries received by August 31, 2008.



Resolution and Magnification in Microscopy

In the simplest case, a microscope consists of one lens close to the specimen (objective) and one lens close to the eye (eyepiece). The magnification of a microscope is the product of the factors of both lenses. A 40x objective and a 10x eyepiece, for example, provide a 400x magnification.

The light wave defines the limit

However, it is not only the magnification but also the resolution that indicates the performance capacity of a microscope. Resolution is the ability to render two closely adjacent dots separately. According to the Rayleigh criterion, the minimum distance between two dots able to be separately imaged corresponds to approximately one-half the wavelength of the light.

$$d = 0.61 \times \frac{\lambda}{n \times \sin \alpha}$$

λ = light-wavelength
 n = refractive index of the medium between specimen and objective
 α = half the aperture-angle of the objective

Therefore, with blue light, the resolution limit is approximately $d = 0.2 \mu\text{m}$; with red light, around $d = 0.35 \mu\text{m}$. UV objectives attain a resolution just under



Fig. 3: Only the interaction of complex lens systems allows optimum image quality.

$0.2 \mu\text{m}$. With the naked eye, we are not able to differentiate structures smaller than 0.2 millimetres.

The value $n \times \sin \alpha$ corresponds to the numerical aperture (NA), the measure of the light gathering capacity and the resolution of an objective. Because the aperture angle cannot exceed 90° and the refractive index is never less than 1 ($n_{\text{air}} = 1$), NA is always below 1 for air. When immersion oil is used ($n > 1$), the numerical aperture increases (to up to approx. 1.45) and, along with it, the resolution.

Fig. 1: The numerical aperture of the objective determines the detail resolution and brightness of the image

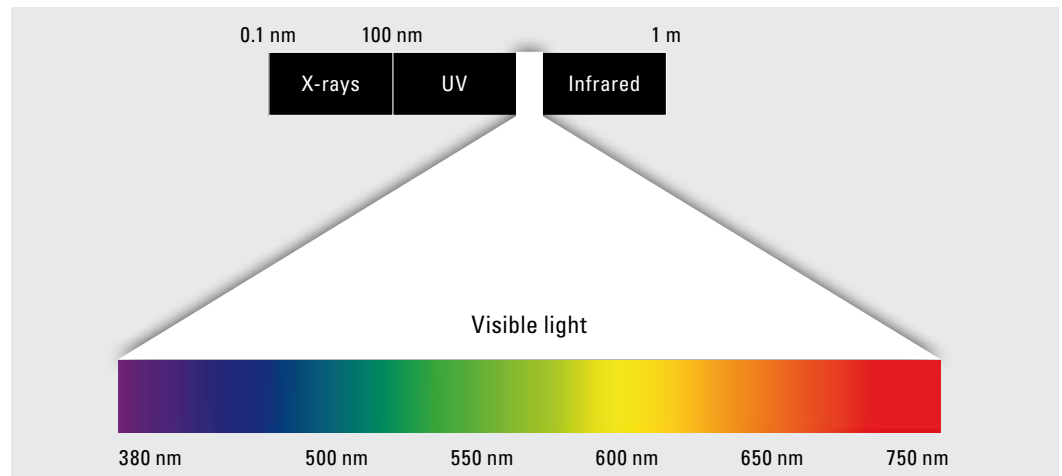
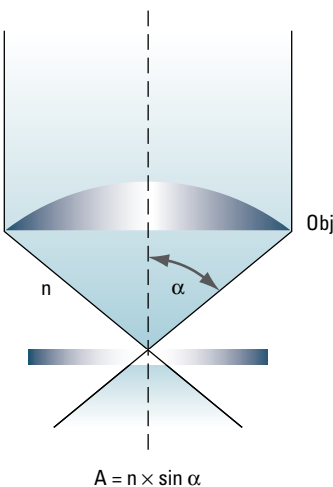


Fig. 2: Wavelengths of the light

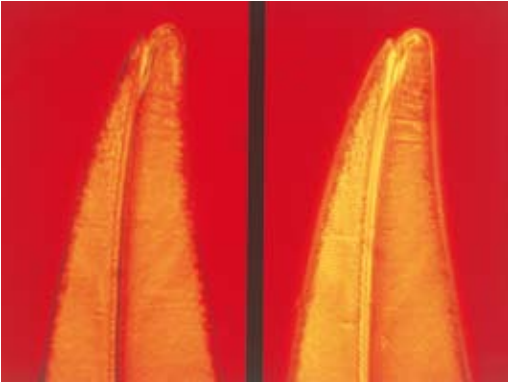


Fig. 4: Images taken with different numerical apertures.

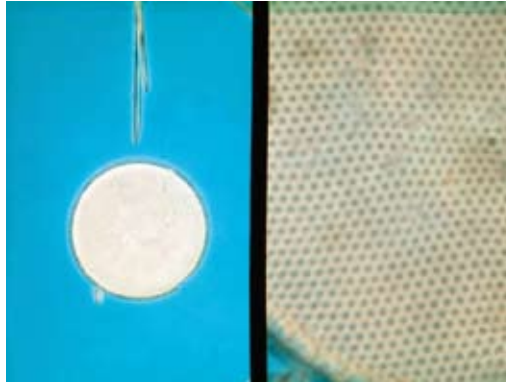


Fig. 5: Different magnifications, same resolution – no additional details are visible.

Immersion oil increases resolution

To make the microscopic resolution detectable to the eye, the image appears in the eyepiece with corresponding magnification. The resolution and magnification are always directly interdependent. An objective with low magnification has a low numerical aperture and thus a low resolution. For a high-magnification objective, the numerical aperture is also high, typically 0.8 for a 40x dry objective. However, because the numerical aperture cannot be increased beyond a certain point, the usable magnification range is also limited in classic light microscopes. The “useful” magnification is between $500 \times \text{NA}$ and $1,000 \times \text{NA}$.

Even more magnification

Everything beyond the “useful” magnification is called “empty” magnification. Though structures appear larger, no additional details are resolved. For high-resolution analysis of microstructures, empty magnification is not desirable. Nevertheless, empty magnification can sometimes be quite useful for making details more easily visible for the human eye. Examples of this are video microscopy and also digital microscopy, where greatly enlarged images are displayed on a monitor, for example.



reSOLUTION – Special Edition

Standardisation in Histopathology – Impossible Dream or Plausible Reality?

A Diagnostic and Commercial Perspective

“Standardisation – the current buzz word in diagnostic histopathology! What does it really mean? How would it affect our day-to-day work? How can it be implemented? These are just some examples of the many questions that are raised when the topic of standardisation is discussed within the histopathology community ...”

The aims of this reSOLUTION Special Edition are to highlight the role that commercial companies can play in conjunction with clinical partners in supporting the diagnostic histopathology laboratory through its continuous search for standardisation in line with the ever-increasing portfolio of diagnostic tests and accompanying guidelines available to us today.

Please feel free to download our reSOLUTION Special Edition:

www.leica-microsystems.com/EU-Pathology

Leica DFC290 HD and Leica Application Suite

Live Images in High-Definition Quality

Presenting high-resolution microscopic live images in high definition TV format on a flat screen, with simultaneous reproducible analysis and documentation via PC, is possible for the first time with the Leica DFC 290 HD.

The new camera is equipped with an additional HDMI interface on which a live image can be displayed on the output parallel to the FireWire (Dual Live Stream). As soon as the camera is connected to a HD-compatible display device (projector, flat screen TV), live images can be viewed in previously unachieved quality. HD technology provides up to five times more detail richness than all previous formats. The microscope image appears on the monitor with practically no delay in high definition (HD-ready 720p or Full-HD 1080p) and at a rate of more than 20 images per second (depending on the size of the live video and the exposure time).

The Leica DFC 290HD features an impressive light-sensitive sensor with a resolution of three megapixels and high-performance electronics in the camera head for high-quality colour calculation and complex signal generation. The camera enables the user to reproduce ultra-sharp, high-contrast images with the smallest details and save them for further analysis.

Full HD
1080

The Leica DFC290HD camera can be used on all Leica microscopes and with all types of illumination.

Individual digital data management

For professional documentation and analysis the Leica Application Suite (LAS) includes an image archive fully integrated with all current Leica microscopes and digital cameras. With its archiving capability, LAS is a versatile image management application for the acquisition, processing, measurement and reporting of images as well as associated data. Using a unique interface, LAS is designed for rapid familiarity and provides a workflow-oriented, logical process in a single system, making operation easier, quicker and more reliable.

The new LAS Web module offers live video streaming as well as real time viewing and consultation remote from microscope. The current LAS preview image can be streamed to a local network.

The new LAS Live Measurement module provides interactive measurement tools. These tools can be used while displaying the live camera image without wasting time for capturing images.

The modular concept of LAS software allows the user to start from an entry-level acquisition station already fully integrated with microscope control and add modules as required.



Events – 2008

Please also visit our website on www.leica-microsystems.com/events for information on Leica Pathology and Diagnostic workshops in Europe

Stoke Mandeville Hospital 2008

May 10
Aylesbury, UK

Congreso Nacional de las Sociedades Española y Portuguesa de Citología 2008

May 12–16
Badajoz, Spain
www.conganat.org/citologia2008/

9th European Congress on Telepathology & 3rd International Congress on Virtual Microscopy

May 15–17
Toledo, Spain
www.seapcongresos.com/telepathology2008/

Woche der Pathologie 2008

May 15–18
Berlin, Germany

Congresso Técnico de Anatomia Patológica (APTAP)

May 16–18
Almada, Portugal

3rd Intercontinental Congress of Pathology

May 17–22
Barcelona, Spain
www.3rdintercontinentalcongresspathology.org

HET Instrument 2008

May 20–23
Utrecht, Netherlands
www.hetinstrument.nl

Pathology Meeting 2008

May 22–24
Uppsala, Sweden
www.conference.slu.se/patolog2008/index.html

Scottish Association of Clinical Cytology

May 23
Kirkcaldy, UK

Assises d'anatomie pathologique

June 5–6
Nice, France

Swiss Histo Tech

June 5–6
Zürich, Switzerland

UK NEQAS Meeting

June 6–7
Coventry, UK

34th European Congress of Cytology (ECC)

June 15–18
Rovaniemi, Finland
www.cytology2008.fi/

MicroScience

June 23–26
London, UK
www.microscience2008.org.uk/

Association française d'Histotechnologie

June 26–27
Reims, France

National Association of Cytologists (NAC)

July 4–7
Keele, UK

ESHRE

July 5–9
Barcelona, Spain
www.eshre.com/emc.asp

MoDeSt

September 7–11
Liège, Belgium
www.modest2008.be

Journées d'Ingenierie Biomedicale

September 10–12
Aix-les-Bains, France

Swiss MedLab

September 16–19
Montreux, Switzerland
www.swissmedlab.ch

XIVth Meeting of the European Association for Haemopathology (EAHP)

September 20–25
Bordeaux, France
www.eahp.colloques-adera.fr/

Scanlab

September 23–25
Copenhagen, Denmark
www.scanlab.nu

Jahrestagung der Deutschen Gesellschaft für Rechtsmedizin

September 24–27
Dresden, Germany

Congresso Nazionale SIAPEC

September 25–27
Bari, Italy
www.siapec.it

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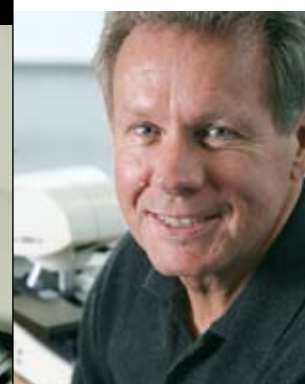
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