

HISTOS 3/5

RAPID MICROWAVE HISTOPROCESSOR
FOR SPECIMENS UP TO 5 MM IN THICKNESS



DUAL PROCESSING TECHNOLOGY FOR CONTINUOUS ACCESS

DOUBLE PRODUCTIVITY

UP TO 220 CASSETTES IN 90'



MILESTONE

COMPASSIONATE TECHNOLOGIES FOR SAME-DAY DIAGNOSIS

MILESTONE

A Company with a Caring Goal

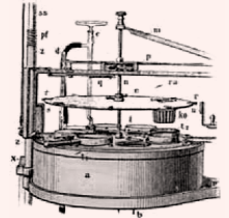
Milestone is committed to reducing patients' anxiety and stress by providing pathologists and histologists with innovative technologies to enable same-day diagnostic results

Since 1909 little has changed.

It was in that year that G. Arendt* described the first histoprocessor.

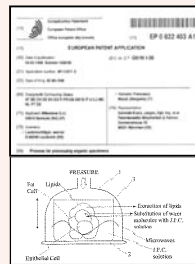
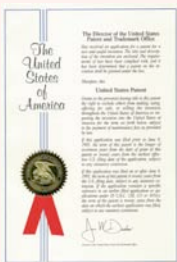
By 1910 all the main techniques had been worked out and many procedures then in use are still followed in virtually unchanged form today.**

Conventional histoprocessors have simply automated manual procedures without making efforts to reduce histoprocessing times.



Compassionate technologies for same-day diagnosis

Milestone's process technology is described in the article "Ultra-Rapid Microwave/Variable Pressure-Induced Histoprocessing: Description of a New Tissue Processor" Journal of Histotechnology, Vol. 21, No. 3, Sept. 1998 by F. Visinoni et al. Milestone's pioneering work in vacuum histoprocessing resulted in 1998 in an European Patent EP 822 403 and US Patent 6042.874.



2006: Milestone HISTOS 3/5 - Automatic microwave histoprocessor - European Patent 1605243
US Patent 7,075,045

1998: Milestone URM - First microwave rapid histoprocessor - European Patent EP 0822403 dated 29.07.1998
US Patent 6,042,874

Today the future is here.

Welcome to HISTOS 3/5, the rapid microwave histoprocessor for same-day diagnosis for reduced patient stress and improved patient care.

The HISTOS 3/5 is the result of Milestone's 18 years of research in applying microwaves to histoprocessing and of the experience of hundreds of microwave histoprocessors installed worldwide. The HISTOS 3/5 provides the ideal combination of processing performance, reagent efficiency, and environmental sensitivity, without sacrificing the morphology and quality histopathologists expect.

* G Arendt (1909) Apparat zur selbsttaetigen Fixierung und Einbettung mikroskopischer Praeparate, Munchen. med. Wochschr. 56:2226-2227
** A History of Microtechnique - Brian Bracegirdle. Science Heritage Ltd., 1987 Publisher



MILESTONE

A catalyst of change to make a difference in the treatment of the patient



SAME-DAY DIAGNOSIS. Benefits for the patient and the patient care management team

For the Grossing Room Operator.

- Carry out grossing according to standard procedures.



For the Histologist

- **Improved workload distribution.**
Process as required for a more even workload distribution.
- **Flexibility**
Process 4-55-110 cassettes
- **Easy sectioning.**



For the Pathologist.

- HISTOS 3/5 processed slides enable the pathologist to deliver **same-day diagnosis of permanent slides**
- Same-day diagnosis will enhance the pathologist's role in cancer patient management



For the Lab Administrator.

- Improved work environment for laboratory personnel.
- Reduced cost for reagents storage and disposal.

For the Oncologist and Clinician

- Within hours oncologists and clinicians can advise patients on the base of definitive diagnosis.
- Treatment can be initiated immediately.



For the Hospital Administrator

- Reduced patient anxiety and stress by providing results within hours.
- Dramatic improvements in efficiency and laboratory productivity.

The Fast Track Biopsy (FTB): Description of a Rapid Histology and Immunohistochemistry Method for Evaluation of Preoperative Breast Core Biopsies

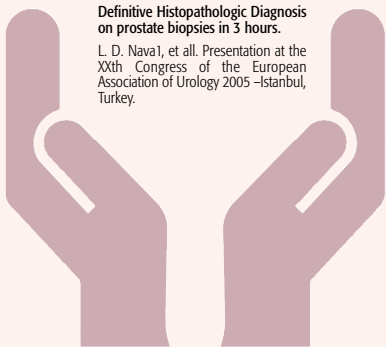
Teresa Ragazzini et al. International Journal of Surgical Pathology 13(3): 247-252, 2005

Definitive Histopathologic Diagnosis on prostate biopsies in 3 hours.

L. D. Nava1, et al. Presentation at the XXth Congress of the European Association of Urology 2005 -Istanbul, Turkey.

For the patient.

- Elimination of needless anguish/stress while waiting for a diagnosis
- More timely start of needed treatment.



HISTOS 3

- 1** Microwave histoprocessor
- 2** Split screen control terminal
- 3** Temperature programmable wax retort

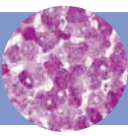
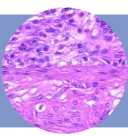
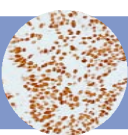


RAPID MICROWAVE HISTOPROCESSOR FOR SPECIMENS UP TO 3 MM

The HISTOS 3 unit is ideally suited for histology laboratories that process generally small to medium size biopsies and where thickness of sampled tissues is easily controlled to no more than 3 mm thickness.

The HISTOS 3 utilizes a higher temperature during the wax impregnation step (instead of the vacuum step used in the HISTOS 5) to eliminate the excess traces of organic reagents from the specimen. Like the HISTOS 5, the HISTOS 3 can process up to 110 cassettes.

UNMATCHED PROCESSING TIMES.

Specimen thickness		Processing time 4/110 cassettes
Transplant biopsies		30 minutes including fixation
1 mm		30 minutes Add 10 minutes to include fixation
3 mm		145 minutes Add 30 minutes to include fixation



RAPID VACUUM MICROWAVE HISTOPROCESSOR FOR SPECIMENS UP TO 5 MM IN THICKNESS

The growing research in the application of microwaves for the acceleration of tissue processing has been fuelled by the need for dramatic reduction in tissue processing times.

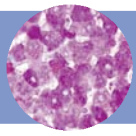
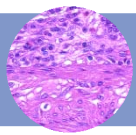
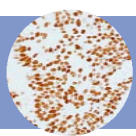

The new HISTOS 5 is the latest result of Milestone's commitment to innovation.

The HISTOS 5, which combines microwave irradiation with state-of-the-art computer control of power, time and temperature, consistently produces rapidly processed tissues with optimal cytomorphology and improved tissue sectioning properties.

The HISTOS 5 unique processing technique provides higher throughput, same-day processing for same-day diagnosis, less patient stress, and a greener and safer work environment.

Rapid and consistent processing of specimens of 4-5 mm thickness is made possible by the patented intermediate evaporation step with a preset vacuum protocol down to 100 mbar.

UNMATCHED PROCESSING TIMES.

Specimen thickness		Processing time 4/110 cassettes
Transplant biopsies		30 minutes including fixation
1 mm		30 minutes Add 10 minutes to include fixation
3 mm		145 minutes Add 30 minutes to include fixation
5 mm		260 minutes Add 60 minutes to include fixation

Designed with you and your requirements in mind.
We could not make it more user-friendly than this.

Highest processing flexibility and simplicity

1) Load a rack with cassettes, from 4 (e.g. transplant biopsies) up to 110 cassettes according to your requirements. Introduce histomodule in the Histos unit.

Only 4 taps on the touch screen are needed to start a process



A) Authorized user log-in



B) Select the maximum thickness of specimen to be processed



C) Select maximum number of cassettes (55-110)



D) Select reagents to be used
Ethanol / Isopropanol / ProWave / JFC



E) Press



Unit runs automatically tracing the ramping and time at temperature (T.A.T) protocol. An audible alarm signal will advise the operator that the step is completed.



2) Transfer the rack from histoprocessor to impregnation retort where wax is already kept at the optimum selected temperature.



E) Press



Press



Impregnation step will begin and run unattended. In the Histos 5 a programmable vacuum protocol down to 100 mm will eliminate all traces of remaining solvent and enhance impregnation. A powerful magnetic stirrer dynamically supports the wax process.

Double productivity

Dual (parallel) Processing

Tap on the screen to start simultaneously the next run with the dehydration / clearing step.

Both the impregnation step of the first run and the dehydration step of the second run will run simultaneously to double your productivity.

At the end of the impregnation step, the rack is extracted from the wax retort, which can now accept the second run of specimens.



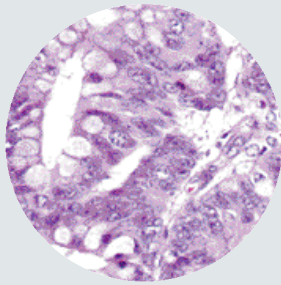
HOW GOOD IS MICROWAVE HISTOPROCESSING?

Very Good!

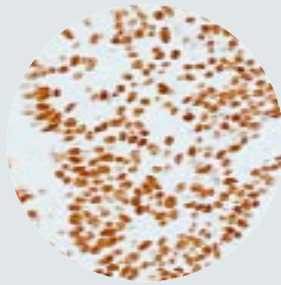


No compromise in regard to morphology and staining expression

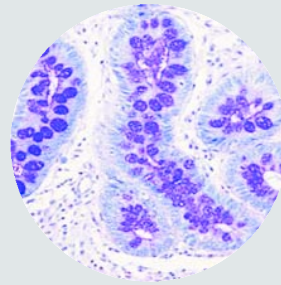
Staining properties of microwave processed specimens are excellent for routine staining, HC, IHC, FISH. In a fraction of the time.



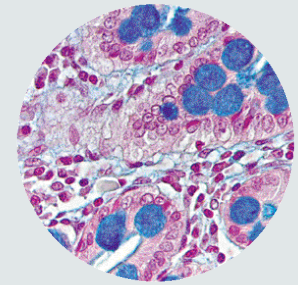
Colonic biopsy, microwave processed in 30 minutes. H&E x 400.



P53, immunohistochemical stain on adenocarcinoma microwave processed tissue, x 400.



PAS mucopolysaccharides staining of stomach gland, microwave processed, x 400.



Bowel biopsy, microwave processed in 90 minutes. Alcian blue x 400.

Do I have to make separate runs according to the type of specimen?

NO. With Milestone technology you can simultaneously process kidney, heart, prostate, liver, lung, colon, uterus specimens. The time at temperature (T.A.T.) prestored protocols are best suited for the **most sensitive tissues**.

Do I have to separately process specimens with different thickness?

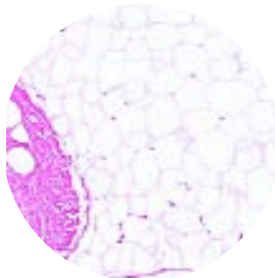
NO. Run simultaneously specimens up to 5 mm. The time is set for the thickest specimen and will not affect thinner ones. In other words: **the temperature is set for the most sensitive, the processing time for the thickest specimens.**

What about fat tissues like breast, lymph nodes? Can I process them?

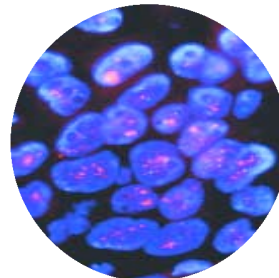
YES. Histos 5 will allow optimum processing of these difficult tissues. Milestone has patented the JFC* solution (ethanol + isopropanol + long chain hydrocarbon) for consistent and reliable processing of fatty tissues.

Processing times of breast tissues

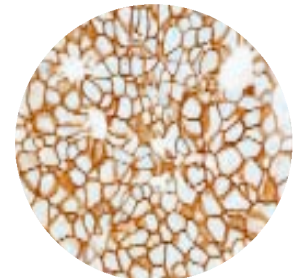
Biopsies	30'
3 mm	2h30'
5 mm	4h30'



Breast biopsy microwave processed, H&E x50



Breast cells HER2 amplification detection by FISH processed by microwaves. Red-labeled HER2 probe, original magnification x 800



Breast cells HER2 amplification detection by IHC, processed by microwaves. Hematoxylin counterstain, original magnification x 400.

*European Patent EP 0822403
US Patent 6,042,874

Which reagents do I need?

Only 2-3 reagents. For low fat specimens only ethanol and isopropanol are required. Milestone has available also a proprietary solution - ProWave - with a very useful color indicator.



Do I need xylene for processing?

NO. Xylene is not required. The prerequisite for a "green lab"



No Xylene

How do microwave processed tissues cut?

Easy. The HISTOS 3/5 method does not expose tissues to lengthy treatments in alcohols, toxic clearing agents (xylene), or wax. Microwave processed specimens therefore do not become overhardened or brittle. Easy sectioning even of difficult-to-cut tissues (e.g. uterus).



Does Histos 3/5 comply with the CAP – CSLI guidelines?

Yes. The HISTOS 3/5 will enable the laboratory manager to fulfill the requirements set by the C.L.S.I. and CAP inspection guidelines.

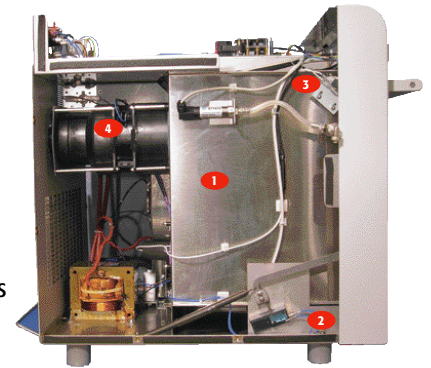
REFERENCE: Clinical and Laboratory Standards Institute. Microwave Device use in the Histology Laboratory; Approved Guideline. C.L.S.I. document GP28-A (ISBN 1-56238-563-1).

REFERENCE: Commission on laboratory accreditation. Anatomic pathology checklist - Rev. December 2006

Does Histos comply with safety standards?

Yes. The Histos is engineered to fulfill the highest standards of safety. Its advanced microwave hardware is designed for the harsh laboratory applications

Full microprocessor control of 800W emitted power.
Mode stirrer technology for optimal microwave field homogeneity.
All stainless steel construction (1) with ceramic bottom plate.
Cabinet coating resistant to organic solvents and acids.
Four fast release microswitches instantly interrupt microwave emission when door is opened (2, 3).
Built-in heavy duty exhaust fan (4) (55 m³/h - 32.4 cfm) for extraction of vapors to fume hood to fulfill CAP and CLSI guidelines



Do I need cleaning cycles?

NO - By having a separate wax retort there are two advantages:

1. No cleaning cycles are required.
2. Service problems due to transfer of liquid wax are completely eliminated.

Can I reuse wax?

Yes! Through the vacuum evaporation and the vacuum during impregnation in the Histos 5, the wax is kept clean and can be reused several times. In the Histos 3 the slightly higher wax temperature and the powerful exhaust keep the wax clean. Only topping of wax to compensate usage is required.

Do I need to change my grossing procedure? Does Histos 3/5 require thin (1.5 – 2mm) specimens to process properly?

Absolutely No. Keep grossing specimens as you are used to. Just set the processing protocol to the thickest specimen, up to 4-5 mm



Can I fix with formalin?

YES. Of course. For a "Green Lab" and whenever molecular studies are required, Milestone advises the use of FineFix, the ethanol based molecular fixative.



Do I need a full rack to operate?

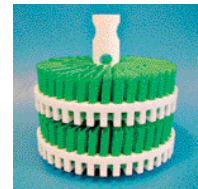
NO. Histos gives you maximum processing flexibility. 3 standard racks plus a rack for mega cassettes are available. They can be loaded with any number of cassettes to fit your workflow.



4 cassettes
(transplant biopsies)



55 cassettes



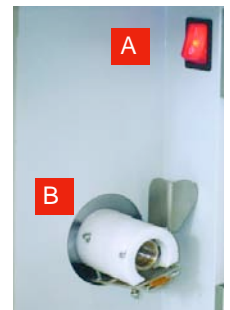
110 cassettes



8 cassettes
(Supermega)

How about changing wax? Is it difficult / time consuming?

Far from it. A heated stopcock at the base of the retort, makes draining the used wax a fast, simple procedure (A+B).



How long do I have to wait at the start to have the wax at the correct temperature?

No waiting. A separate power supply allows the microwave unit to be switched off during the night, while the wax is kept at the preset working temperature.

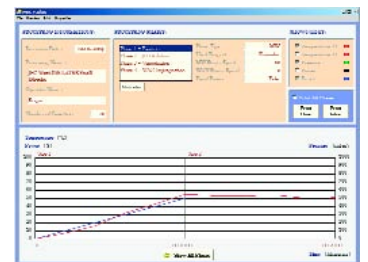
Our lab has a strict QA program. How can Histos comply with it?

Easy. Histos 3/5 features full documentation for T.Q.M., ISO, GLP programs.



All processing data can be downloaded/transferred to a PC via a USB memory drive and printed by dedicated software.

All steps of each program are documented to fulfill quality assurance requirements.



Can I preset my “favorite protocols”? Can I modify or start a brand new protocol?

YES. Of course. Easily done. Select the favorite standard protocol or store a new / modified protocol guided by the user-centric software. Tap on the favorite protocol to start the sequence.



My specimens are extremely precious. Do the Histos 3/5 protect them?

YES. Absolutely. There are unique specimen protection features.

- Password access to prevent unauthorized use/tampering on start-up of the system
- Over/under temperature threshold alert (up to $\pm 5^{\circ}\text{C}$)
- Over/under pressure threshold alert (up to ± 50 mbar)
- Protection of pre-installed programs



Do I have to invest time to determine best protocol for staining, decalcification, epitope retrieval etc.?

NO. Every Histos is delivered with the Histos Handbook. This unique, highly visual publication will take the histologist through easy, step by step procedure eliminating guessing, and trial-and-errors efforts. All calibrations of standard optimized program are factory prestored.



Where can I learn more about rapid microwave technology for histoprocessing?

Don't look any further. Milestone's role as a leader in bringing innovation to the histology laboratory is recognised by the pioneers and world experts in microwave histology applications, including Dr Boon, Dr Kok, and Prof Leong. Their recently published books are available through Milestone for all histotechnologists interested in investigating the advantages of rapid microwave histoprocessing.



Microwaves for the Art of Microscopy
L.P. Kok and Mathilde Boon
Coulomb Press, Leiden 2003



“Microwave Technology for Light Microscopy and Ultrastructural Studies”
Anthony S-Y Leong, MD -
Amarin Press, 2005

Is rapid histoprocessing the only procedure the Histos 3/5 can carry out?

Glad you asked. The Histos 3/5 is more than a histoprocessor. It is a state-of-the-art multifunctional microwave labstation with factory prestored, optimized, full documented rapid protocols for

- HISTOPROCESSING
- SPECIAL STAINS
- DECALCIFICATION
- EPITOPE RETRIEVAL
- GROSS HARDENING
- FIXATION

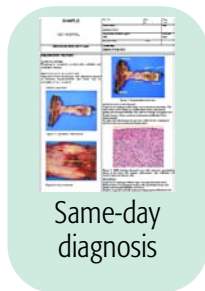
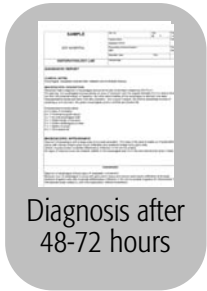
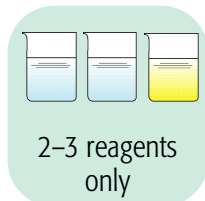
CONVENTIONAL

HISTOS 3/5

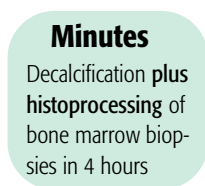
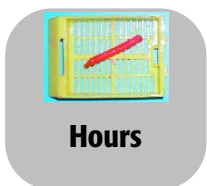
CONVENTIONAL

HISTOS 3/5

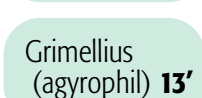
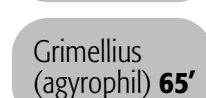
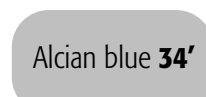
HISTOPROCESSING



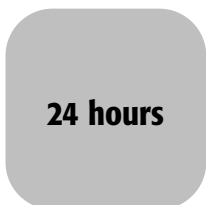
DECALCIFICATION



SPECIAL STAINS



GROSS HARDENING



FIXATION



EPITOPE RETRIEVAL



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UNI EN ISO 9001: 2000 CERTIFIED

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