Tips and tricks for optimizing your IHC workflow

Find out how to improve your IHC lab's efficiency

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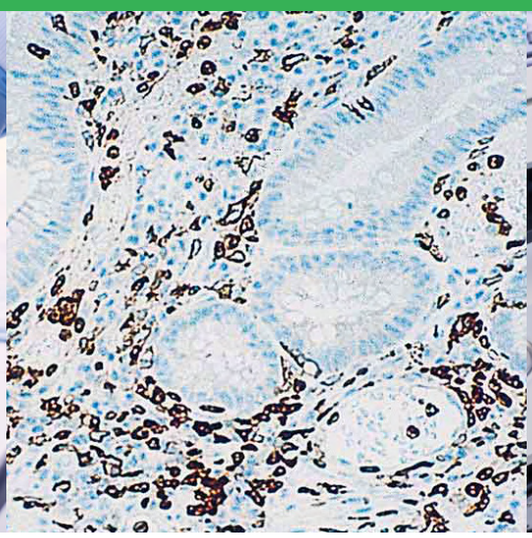
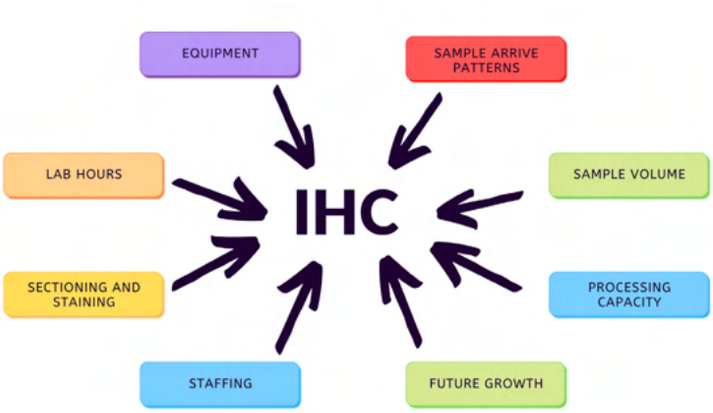



Introduction

Immunohistochemistry (IHC) is essential for so many scientific and diagnostic functions. Yet most IHC laboratories will struggle to meet demand, experience difficulties with flow or efficiency, or encounter challenges when finding the best way to structure their workflow. For optimal efficiency, all areas of the workflow must be considered for optimization.

The key to improving the IHC flow is to consider all areas of the workflow and the laboratory setup in a holistic manner. The experts at Leica Biosystems will work with a laboratory to understand its individual needs and how best to improve efficiency based on the laboratory's specific and unique requirements linked to performance. This includes considering all the components and factors in play across the entire workflow.

There is no 'perfect' workflow that can anticipate sudden changes, both planned and unplanned. However, a workflow that has been considered and optimized throughout, is adaptable and can respond to increased demands or changes.



Contents

In this eBook, we'll look at key areas to consider when optimizing the IHC workflow. Read on for tips and best practices when optimizing the workflow in your laboratory.

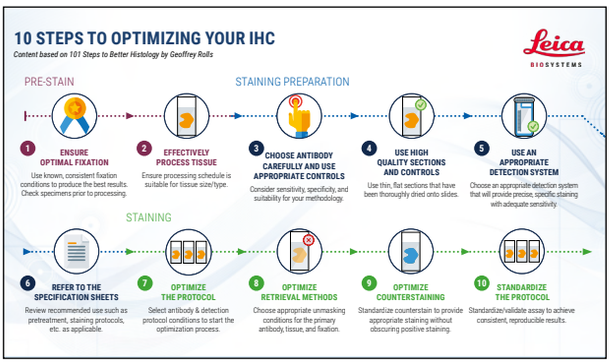
Processing

Processing encompasses many different stages and individual processes in the preparation and staining of samples. Mapping out full processes with regards to this can help to identify inconsistencies in the methods used across the lab, or duplications and other inefficiencies. Leica Biosystems uses a process map to support laboratories to first understand their processes, then identify areas for optimization. This may vary for different protocols, so it is worth considering different process maps and how they work together.

When stages have been identified, many will relate to sample handling and staining. To

address detailed aspects of these stages and really understand each one, this useful e-book "Immunohistochemistry: an overview and steps for better IHC staining" can help to ensure that every step is as optimized as it can be.

For a lighter-touch approach and something that can be easily referred to, the document '10 steps to optimizing your IHC' contains an easy-to-follow list for some of the most common areas within IHC that could be improved.



There are many options for optimizing your IHC during processing. Extract from '10 Steps to Optimizing Your IHC'.

What works best for each laboratory is determined by their individual goals and current setup. In this case study, the laboratory saw great success by automating its specimen tracking. This was established as the best way to optimize workflow after careful observation and assessment, which exemplifies that one size does not fit all – each must be considered individually.

Lab efficiencies

Although working to optimize your workflow can increase efficiency, there are some tasks or organizational aspects where optimization will have the most impact.

For example, laboratory staffing levels – especially applicable in a large laboratory where samples arrive at different times and have different urgencies for processing – can considerably affect capacity and throughput. Every laboratory will manage staffing levels differently, and optimization of workflows requires a holistic approach. When done well, optimizing staff levels has the potential to significantly improve lab efficiency.

In this case study, by optimizing its workflow the laboratory was able to double its slide capacity and greatly improve other areas of throughput. Optimization alone may not be enough, and addressing your staffing issues may need to go beyond your current capacity. Working through your processes and laboratory needs can present the optimal solution and prevent increasing spend where it would not make the most difference. In this example, the laboratory was struggling to enable the processing of enough samples – as well as optimizing other aspects of the workflow. The proposed solutions led to a doubling of their throughput.

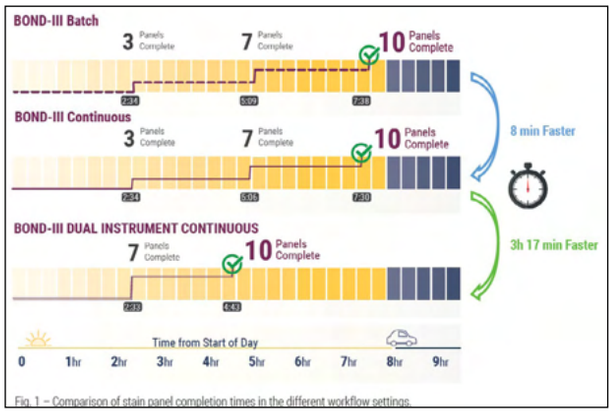


Fig. 1 – Comparison of stain panel completion times in the different workflow settings.

Changing the way that your equipment works to process samples can have a large impact on efficiency. Image from 'Perfecting the BOND-III Automated Immunostainer'.

The way that you utilize equipment and structure run-times can also greatly affect your turnaround time. In an experiment with the BOND-III system, a capacity and throughput analysis was conducted to assess the impact on turnaround time of batch, single continuous and dual instrument processing.

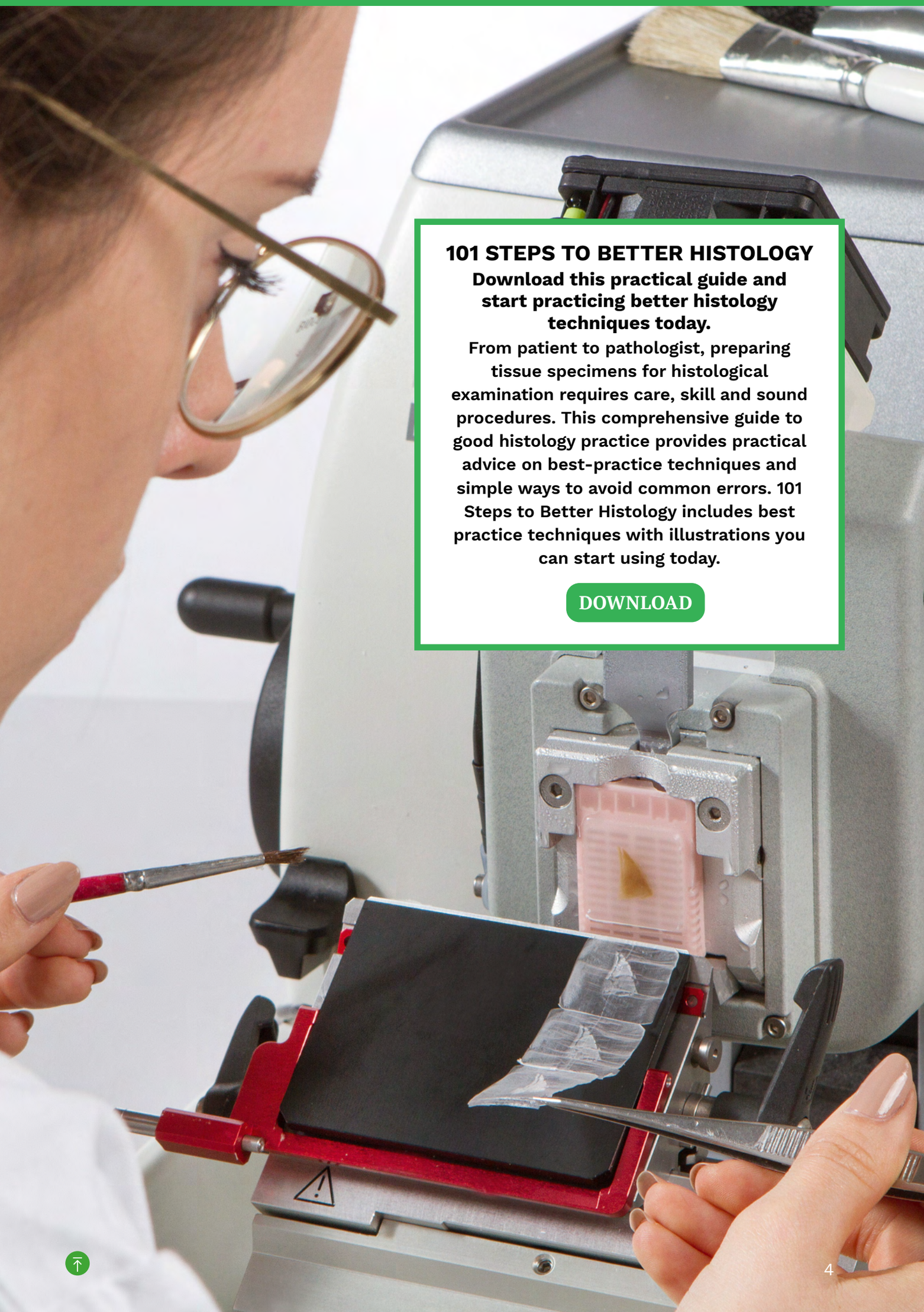
Workflow optimization can even take into account the physical flow of laboratory space, understanding how people move between equipment and reorganizing based on efficiency.

By taking an overview of an entire laboratory, its processes and how it operates in real life, a holistic approach to optimization can dramatically improve efficiency, reduce turnaround time, and increase the throughput of a laboratory.

Additional resources

101 steps to better histology

This eBook can help you to troubleshoot and develop optimal processes for all your histology work. Steps 73 – 88 are particularly relevant to immunohistochemistry.



101 STEPS TO BETTER HISTOLOGY

Download this practical guide and start practicing better histology techniques today.

From patient to pathologist, preparing tissue specimens for histological examination requires care, skill and sound procedures. This comprehensive guide to good histology practice provides practical advice on best-practice techniques and simple ways to avoid common errors. 101 Steps to Better Histology includes best practice techniques with illustrations you can start using today.

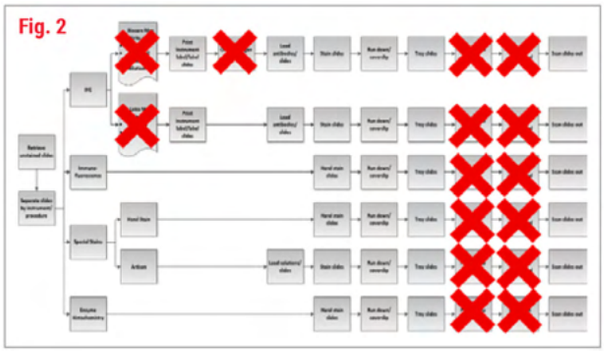
DOWNLOAD

CASE STUDY

Using lean tools to identify inefficiencies in IHC processing

Ashley Troutman

The Leica Biosystems Process and Solutions Optimization team partnered with a medical university to examine how to optimize their IHC lab. Laboratory leadership was interested in gaining efficiencies in the immunohistochemistry and special stain lab as volumes increase. The Process and Solutions Optimization team identified some ways to help this laboratory recognize and overcome areas where inefficiencies have hindered their ability to increase capacity.



As Figure 1 shows, there are a myriad of steps found in the special stain/IHC lab. The divergent work paths reflect the number of independent processes performed by, generally, two technicians. Many of the processes are manual and involve slide sorting, handwriting, and recopying information on paper. For a run of 149 total slides, 42 minutes were spent organizing information to prepare the run.

As seen in Figure 2, by eliminating the handwriting, paper, and relabelling, the complexity of processing the slides is greatly reduced.

Projections and realized results are specific to the institution where they were obtained and may not reflect the results achievable at other institutions.

Summary

By reducing handwriting and paper, along with utilizing a single platform IHC system, the hands-on tech time was reduced by 40% with current processes (from 52 minutes to 31 minutes). By eliminating additional waste steps such as double (or triple) labelling, the hands-on tech time was further reduced another 21 minutes bringing the total hands-on time to 10 minutes, an 81% reduction in hands-on tech time.

Immunohistochemistry: an overview and steps for better IHC staining.

Immunohistochemistry (IHC) is used in histology to detect the presence of a specific protein marker that can assist with accurate tumor classification and diagnosis. This guide illustrates the basic steps used to create an IHC stain.

10 STEPS TO OPTIMIZING YOUR IHC

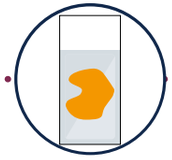
Content based on 101 Steps to Better Histology by Geoffrey Rolls

Leica BIOSYSTEMS

PRE-STAIN

1 ENSURE OPTIMAL FIXATION

Use known, consistent fixation conditions to produce the best results. Check specimens prior to processing.



2 EFFECTIVELY PROCESS TISSUE

Ensure processing schedule is suitable for tissue size/type.

STAINING PREPARATION

3 CHOOSE ANTIBODY CAREFULLY AND USE APPROPRIATE CONTROLS

Consider sensitivity, specificity, and suitability for your methodology.

4 USE HIGH QUALITY SECTIONS AND CONTROLS

Use thin, flat sections that have been thoroughly dried onto slides.

5 USE AN APPROPRIATE DETECTION SYSTEM

Choose an appropriate detection system that will provide precise, specific staining with adequate sensitivity.

STAINING

6 REFER TO THE SPECIFICATION SHEETS

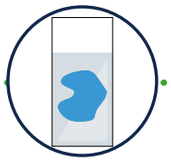
Review recommended use such as pretreatment, staining protocols, etc. as applicable.

7 OPTIMIZE THE PROTOCOL

Select antibody & detection protocol conditions to start the optimization process.

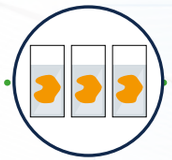
8 OPTIMIZE RETRIEVAL METHODS

Choose appropriate unmasking conditions for the primary antibody, tissue, and fixation.



9 OPTIMIZE COUNTERSTAINING

Standardize counterstain to provide appropriate staining without obscuring positive staining.



10 STANDARDIZE THE PROTOCOL

Standardize/validate assay to achieve consistent, reproducible results.

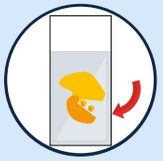
CONSIDERATIONS

PREVENT NON-SPECIFIC STAINING

Carefully select antibodies to avoid cross-reactivity, block endogenous peroxidase, and ensure signal-to-noise ratio is optimized.

STANDARDIZE WASHING STEPS

Use standardized washing steps throughout (duration, volume, and form of agitation).

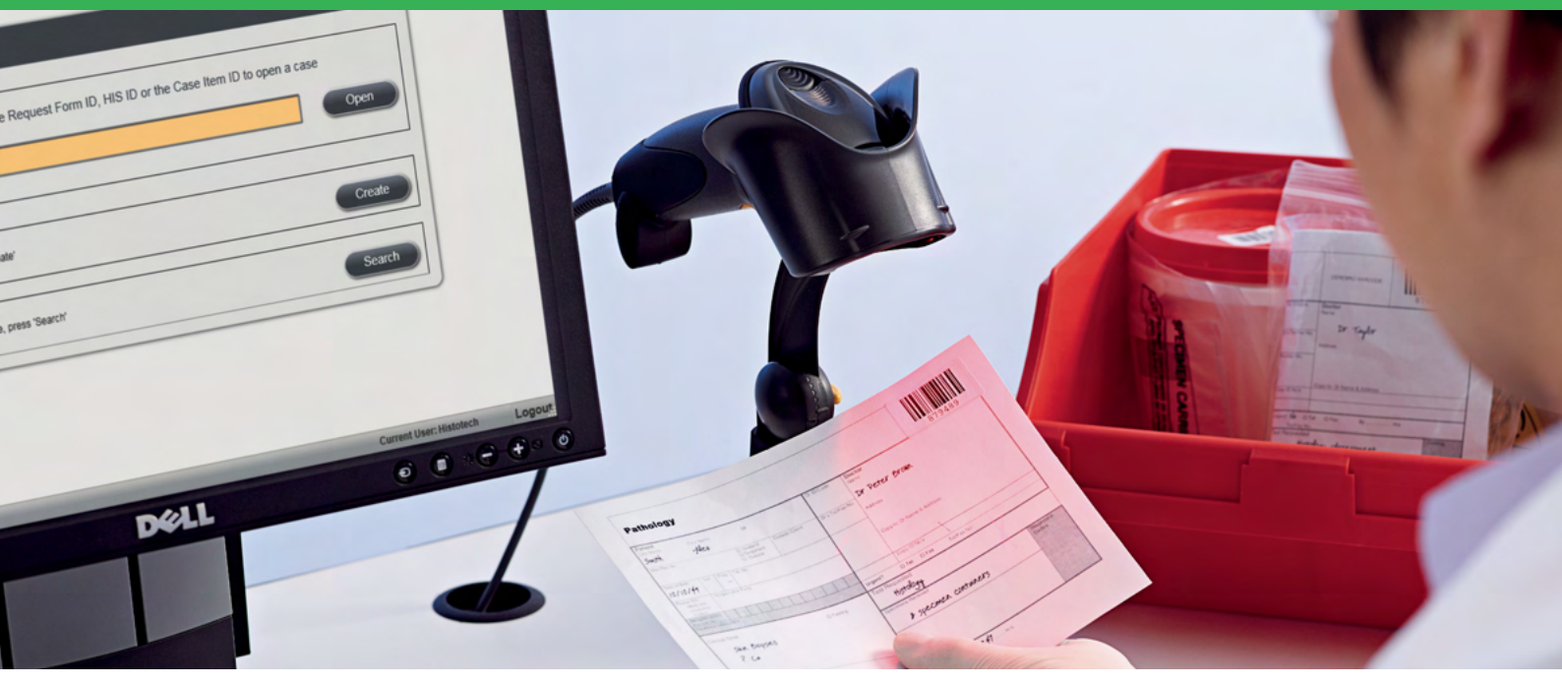


MAINTAIN OPTIMAL TISSUE MORPHOLGY

When optimizing protocols, obtain optimal sensitivity & specificity while maintaining good tissue morphology.

MORE INFORMATION IS AVAILABLE ON PATHOLOGY LEADERS:

LEARN MORE



CASE STUDY

Optimizing microtomy, case assembly and IHC testing through implementation of automated specimen tracking

David Newell

The Leica Biosystems Content and Evidence Team partnered with a private, multispecialty clinic to assess the impact of implementing automated specimen tracking into their laboratory. This laboratory was most interested in increasing efficiency and patient safety throughout their processes.

During the Optimization Assessment, the Content and Evidence Team observed current processes throughout the histologic process beginning with accessioning and following through to case assembly. As with many laboratories without automated specimen tracking, paper logs or pending reports are used to track samples and users. The staff at this facility currently use LIS-generated pending reports to follow cassettes and slides through their processes. Technologists refer to the reports for necessary sample information and to initial the steps that they perform to those samples.

The Leica Biosystems Content and Evidence Team also observed the current processes involved in creating slides. Slide labels are created while grossing dictation is entered into the LIS. The labels are printed from the LIS for each case. The labels are then delivered to the histology area of the laboratory in large batches. The staff spend time placing the labels onto the selected color slides and sorting them by case type and number. When cassettes are ready for microtomy, the technologists search for the matching slides and create a batch. Because there is such a large possibility of matching errors, the laboratory performs a manual block check verification with the slides before sending them to a pathologist.

Through the implementation of an automated specimen tracking system, this laboratory could move towards eliminating the use of the LIS reports and change their labeling and slide creation process to a safer on-demand process. The resulting on-demand slide creation would be verified in the specimen tracking system to ensure that the tissue placed on the slide is from the correct cassette. This would help eliminate the chance of a mislabel during the labeling process in microtomy and reduce the safety risk to the patient. By eliminating these currently required manual steps, the average hands-on time would drop from 171.4 seconds to 147.2 seconds per block in microtomy.

Another area in which a specimen tracking system would increase efficiency is in immunohistochemistry. Since the specimen tracking system could be integrated with their IHC instrumentation, there would no longer be a need for the manual stain ordering and the assignment step. This integration could save more than 29 seconds per slide of hands-on time.

Projections and realized results are specific to the institution where they were obtained and may not reflect the results achievable at other institutions.

Since the specimen tracking system maintains the necessary information and tracks users throughout the process, the need to refer to or initial logs should be eliminated. The chart below shows specific steps and time savings that this laboratory could realize.

- Elimination of pending log used in 3 areas of the laboratory
- Savings of approximately 1432 hours/year by eliminating manual tasks
- Reduction of 14.1% hands-on time at microtomy
- Elimination of possible mislabel at grossing and microtomy
- Integration of a specimen tracking system with IHC instrumentation could save more than 29 seconds per slide of hands-on time.

reduction of hands-on time in microtomy

Time Savings with Automated Specimen Tracking Solution

Area of Work (Accn, Gross, TP, EMB, etc)	Resource Applied (Aide, HT, clerk, etc)	Observed Unit (block, slide, case, etc)	Activity	Time Required (in seconds)		Net Time Saved (in seconds)	Savings Per Year (in hours)
				Current	With Automated Specimen Tracking Solution		
Transcribe		Slide	Label Slide	12.85	3.5	9.35	**616.99**
Embed		Block	Initial Log after Embedding	2.73	0	2.73	**59.3**
Section		Block	Pull Slides for blocks/cases	10.88	0	10.88	**236.3**
Section		Block	Initial Log after Sectioning	3.97	0	3.97	**3.97**
Case Assembly		Slide	Block Check	6.02	0	6.02	**397.2**
Case Assembly		Slide	Initial Log /Verify all slides	2.08	2	0.08	**5.3**
IHC		IHC Slide	Order Stain in IHC Stainer	18.5	0	18.5	**72.1**
IHC		IHC Slide	Assign Stain Order to Slide	10.52	0	10.52	**41.0**
			Total Annual Hours				**1432.2**

Time and Motion studies were conducted assessing the time requirements and activities across multiple operators.

Data on file with Leica Biosystems

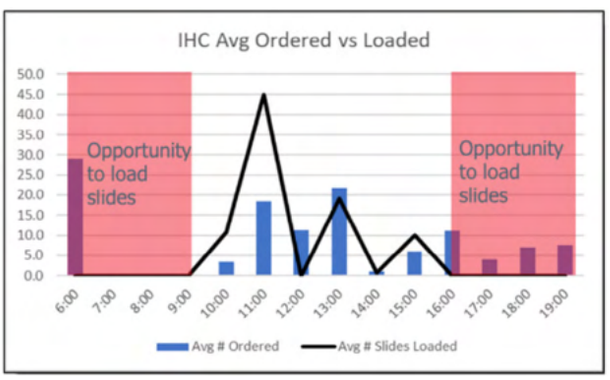
Projections and realized results are specific to the institution where they were obtained and may not reflect the results achievable at other institutions.

CASE STUDY

Optimization of staff and equipment to boost throughput

Ashley Troutman

The Leica Biosystems Process and Solutions Optimization team partnered with a major academic facility within an Integrated Network to examine how to optimize staffing and equipment in their immunohistochemistry lab. This laboratory was most interested in the impact that additional staffing as well as instrument optimization can have on increasing throughput in the face of anticipated volume increases. By performing a capacity and throughput analysis, the Leica Biosystems team can understand the lab's process and present a solution that satisfies their goals.



This lab has only one tech to pull the IHC orders, cut the IHC slides, and perform the IHC staining, so they are looking to hire an additional tech. Currently, they have two BOND-III stainers and one BOND-MAX stainer and no instrumentation connected to their Laboratory Information System. Additionally, there are several cases per day that exceed 30 slides each, significantly reducing the amount of space available for the remaining cases that have been ordered. By looking at the ordering patterns above, it was determined that there are times where orders are put in, but either no one can prepare the slides or the instruments are full, requiring the slides be held to the following day. The Leica Biosystems Process and Solutions Optimization team looked at the client's needs and options and prepared the following staffing model to aid the Lab Manager in scheduling the additional tech:

	Early Tech	Later Tech	
6:00	Unload overnight run		6:00
6:30	Load first run		6:30
7:00			7:00
7:30	Distribute overnight run		7:30
8:00			8:00
8:30	Pulls/cut second run		8:30
9:00			9:00
9:30		Unload first run	9:30
10:00	Load second run	Pull/cut third run	10:00
10:30	Distribute first run		10:30
11:00			11:00
11:30	Lunch		11:30
12:00	*Admin/prep validations,etc.*	Lunch	12:00
12:30			12:30
13:00	*Unload second run*	Unload second run	13:00
13:30		Load third run	13:30
14:00	*Distribute second run*	Distribute second run	14:00
14:30			14:30
15:00			15:00
15:30			15:30
16:00			16:00
16:30		Unload third run	16:30
17:00		Distribute third run	17:00
17:30		Load overnight run	17:30
18:00			18:00

By creating a "split shift" with two techs, this team can potentially:

Increase their capacity from 180 slides per day to 360 slides per day

- Eliminate the need to hold cases due to space issues
- Distribute 50% more cases to Pathologists by days end

Meeting the growing demands for volume, this team has strategically optimized staff and equipment to effectively increase throughput.

Projections and realized results are specific to the institution where they were obtained and may not reflect the results achievable at other institutions.

Improved turnaround time (TAT) with a dual instrument continuous flow

Rapid reporting is crucial in the pathology laboratory. Clinicians want to quickly triage patients and support them with the most appropriate therapy based on an essential panel of stains. From the first to the last stain: all pieces of the diagnostic puzzle need to be done quickly and consistently.

HEMATOPATHOLOGY PANELS				
	Panel A	Panel B	Panel C	Panel D
Ave. TAT	2:33:06	2:36:07	2:28:39	2:28:39
	BCL2	BCL2	BCL2	BCL2
	BCL6	BCL6	CD3	BCL6
	CD3	CD3	CD5	CD3
	CD5	CD5	CD10	CD10
	CD10	CD10	CD20	CD20
	CD20	CD20	CD21	CD45
	CD21	CD21	CD23	Ki67
	CD23	CD23	Cyclin D1	TdT
	Cyclin D1	Cyclin D1	Kappa	
	Kappa	Ki67	Lambda	
	Lambda			

Turnaround time (TAT): A key performance indicator (KPI) of lab performance

The interval between when a patient sample arrives in the pathology laboratory to the time a result is available to the clinician, is a significant Key Performance Indicator (KPI) of the pathology lab performance. This factor is described as Timeliness; and it can be calculated and expressed as turnaround time (TAT).

A comprehensive study with three different scenarios

1 Batch
2 Single continuous
3 Dual instrument

The objective was to show through core pathology lab analysis metrics if a new TAT standard for IHC can be reached with the BOND-III system.
At the same time, we also evaluated reagent volume efficiency and amount of waste generated as Quality Control Measurements (QCM) of productivity.

METHODS

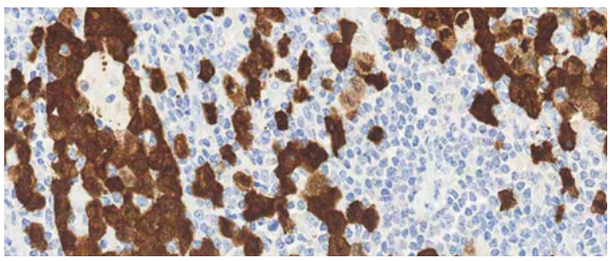
Antibody selection and workflow definition

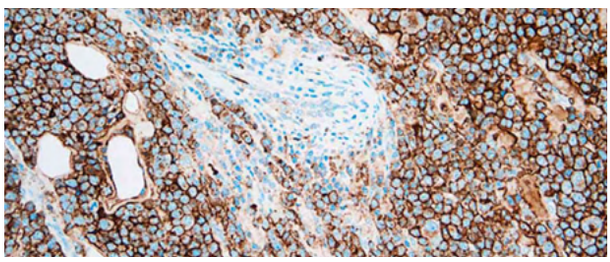
In this study, we compared TATs of 10 IHC panels for 10 common hematopathology disease states, which were selected based on world-wide incidence rates in hematopathology.

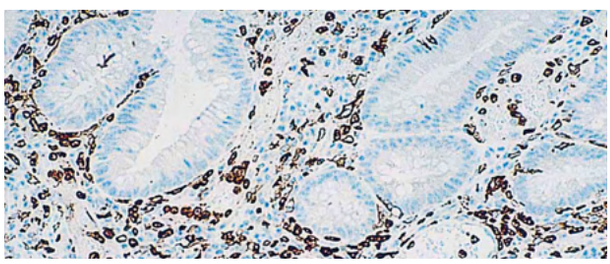
The antibodies selected were derived from recommendations published by the National Comprehensive Cancer Network (NCCN), an alliance of leading cancer organizations globally recognized for creating best-practice clinical guidelines.

The workload included 10 common hematopathology panels with 24 antibodies and 88 slides (slide set). This slide set intended to represent the capability of an 8-hour shift throughput for the types of automated IHC instruments currently in use in the pathology lab (90 slides/shift).

The slide sets were run in triplicate; and, for each run, the objective was to record the slide start and finish times, run ID and run reports recorded from the software, including the “Run Start Pressed” time and “Run Successfully Completed” time.







Workflow settings

Three different workflow conditions were evaluated:

1. In the Batch workflow setting, the slide sets were run in three distinct batches, with the 2nd and 3rd batches starting only after all slides of the preceding batch have been completed.

2. In the Single Continuous workflow scenario, the slide sets were run continuously, so that as soon as a single tray completed staining, it was removed and the next tray started.

3. In the Dual Instrument Continuous workflow, the slide sets were split over two instruments and run continuously as in the previous setting. Slides were split by antibody, and the number of slides were balanced across the two instruments.

METHODS

The following formula was used to calculate the panel finish time (TAT):

Panel Finish Time (TAT) = ["Run Completed" time representing the last slide in the panel to finish] – ["Run Start" time representing the first slide in the day's workload)

Statistical analysis of TATs was conducted to determine the statistical significance of marker TAT difference. These analyses were conducted using the probability associated with a student's paired t-test, with a two-tailed distribution.

RESULTS

Comparison: Batch vs. single continuous vs. dual instrument continuous

In order to compare TATs for each workflow setting, identical slide sets were run for Batch, Single Continuous, and Dual Instrument Continuous workflows; and times for completion were recorded by the software.

Panel completion times were very similar for Batch and Single Continuous workflows. However, there was a significant improvement in TAT when a Dual Instrument Continuous workflow was used.

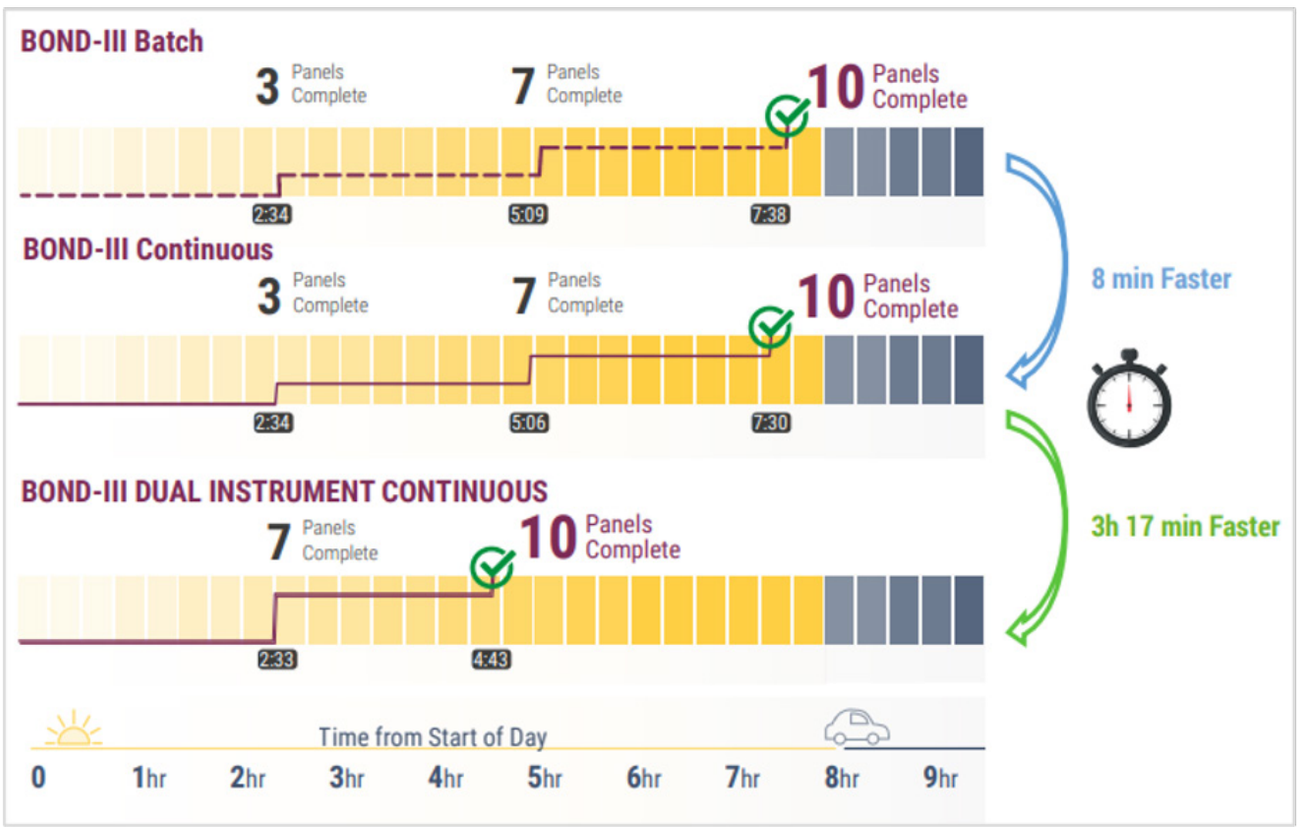
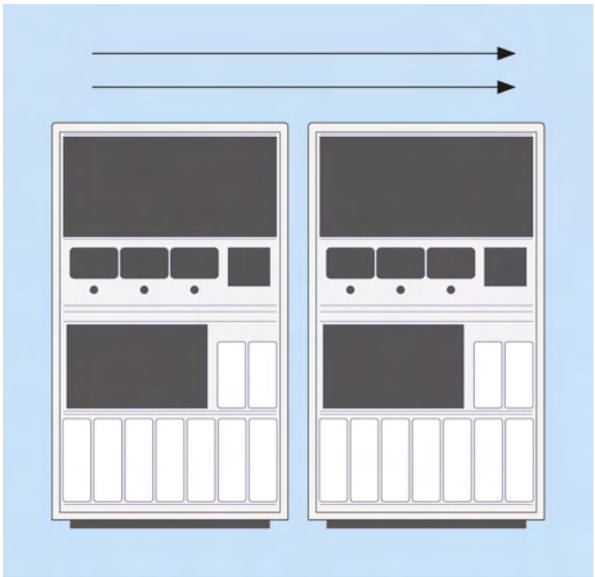


Figure 1: Comparison of stain panel completion times in the different workflow settings.

RESULTS

In this last case, the slide sets were split over two instruments and run continuously, so that as soon as a single tray completed staining, it was removed and the next slide or tray started. The independent tray functionality allowed for flexible case management; and slides were split by antibody with the number of slides balanced across the two instruments.



Using Dual Instrument Continuous workflow, the complete set of 10 IHC stain panels were finished 3h 17min faster than with other conditions. The final 10 IHC panel stain results were completed within 4h 43 min of the initial sample input - well under the usual personnel 8-hour lab shift. In terms of lab worker productivity, these results mean that manpower can now be redirected towards value-added activities, such as quality assurance. This allows for a redefinition and requalification of the laboratory job roles with improved operational skills.

At the end of the day, the lab work is done faster. This can improve staff work-life balance, fostering further commitment and enthusiasm from the lab manager/technician role. Solutions that help promote better work-life balance and mental health are efficient ways of supporting lab productivity.

On top of that, the panel of stains can be delivered to the pathologist less than 5 hours after the initial sample input, which means the patient diagnosis can be achieved faster. This raises the performance not only of the pathology lab, but of the clinic as a whole. Although not representative of all labs on all days, these results are achievable when using BOND-III Dual Instrument Continuous workflow setting.

REAGENT EFFICIENCY

With the BOND-III instrument, it was possible to pre-load all reagents needed for the complete set of slide panels analyzed.

	COUNTING AND LLS (MEASURED VOLUME)
NORMAL DISPENSE	✓
INSUFFICIENT REAGENT DETECTION (Leaks, Spills, Off-Instrument Dispenses)	✓
ABNORMAL REFILL CORRECTION	✓

Using a Liquid Level Sensing (LLS) system, the BOND-III equipment accurately measured reagent volumes, avoiding dispense errors which tend to lead to false negatives. With LLS, the BOND system precisely reported the antibody volume remaining in the container, meaning that accidental spills or unexpected volume changes were accounted for.

WASTE MANAGEMENT

The BOND-III featured efficient waste separation, automatically parting hazardous from standard waste. This capability minimized workers' handling of toxic solutions, promoting a safer work environment.

BOND-III produces 73% less waste than other IHC systems commercially available.

BOND-III
200
SLIDES
Before emptying the BOND-III 5 L Standard and Hazardous waste containers.

Furthermore, the BOND-III also reduced the amount of reagent needed to stain each IHC slide, producing lower volumes of waste in comparison with other automated IHC systems commercially available in the market.

In these settings, staff could run up to 200 slides before emptying the BOND-III 5 L containers, which further reduced manual work from the technician side.

CONCLUSIONS

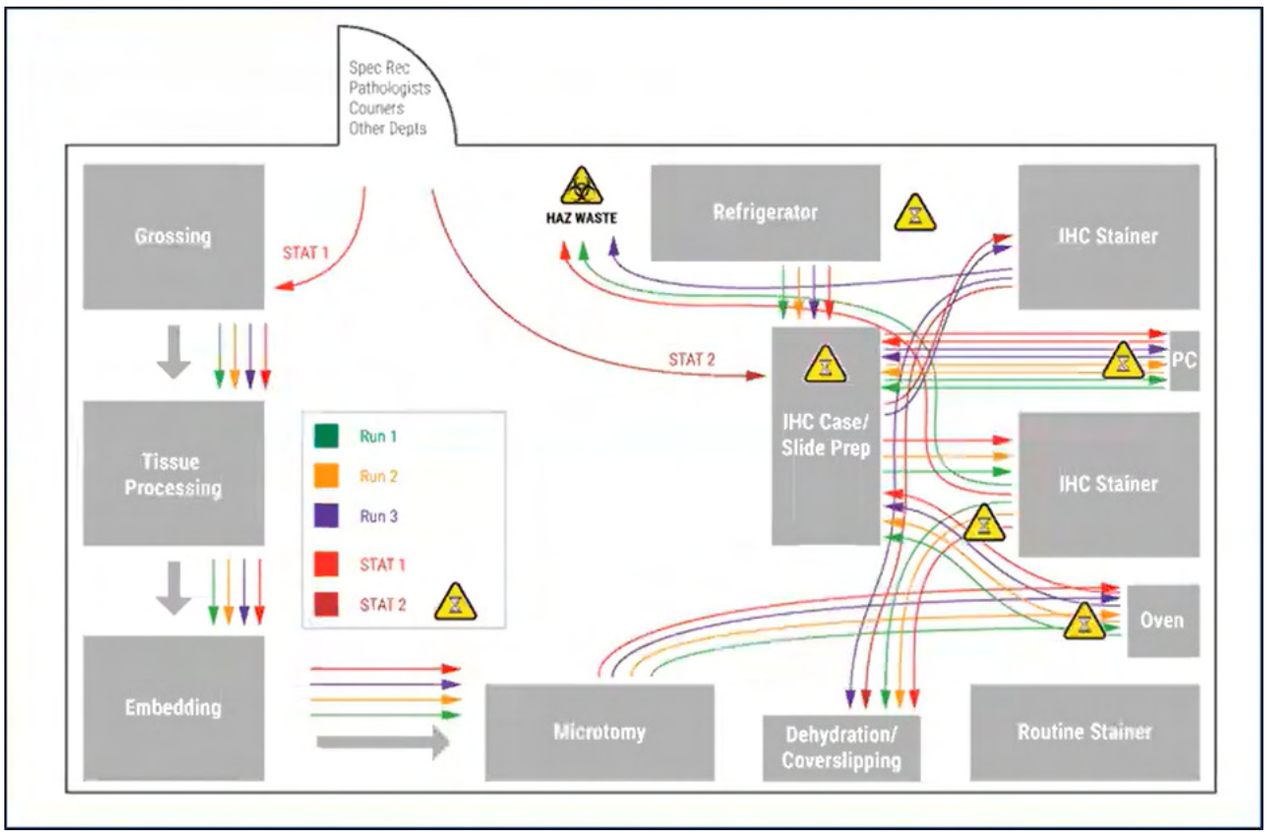
At Leica Biosystems, we always strive to outperform ourselves. As such, we perfected the BOND-III automated immunostainer to improve the IHC performance of the pathology lab.

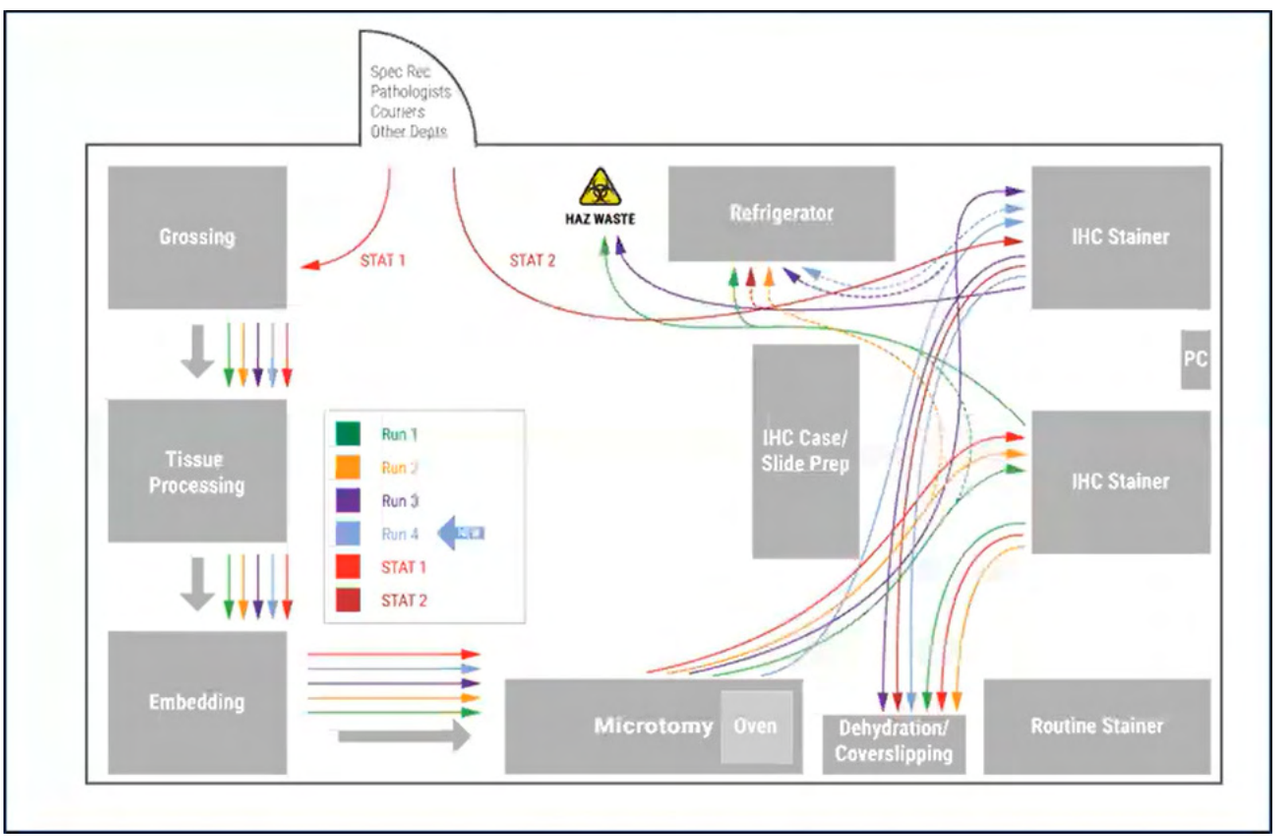
A Dual Instrument Continuous workflow reduces TAT of panel stain sets to less than 5 hours after the initial input. The instrument Liquid Level Sensing system accurately measures reagent volumes; and 45 mL of waste per slide together with an efficient hazardous waste separation mode perfects the BOND-III performance.

Leica Biosystems empowers labs to deliver high-quality and reliable staining to support patient care.

HOW DOES A LABORATORY FLOW?

The diagram illustrates how workflow optimization can even take into account the physical flow of laboratory space. In this example, Leica Biosystems assessed the use of space and movements between various equipment, understanding how people move between equipment and reorganizing based on efficiency.





For a timely diagnosis...

FEATURED PRODUCTS
Optimization of staff and equipment to boost throughput

Ashley Troutman

The BOND-III stainer provides you with all of the pieces to solve the diagnostic puzzle quickly and consistently. Maximize your lab space with this compact solution that combines efficiency and organization, allowing you to achieve up to 60% more slide throughput per m²* compared to other leading instruments on the market.

Independently benchmarked antibody clones means quality that Pathologists can trust: pair the BOND-III stainer with optimized Novocastra HD BOND reagents and BOND Compact Polymer Detection solutions.

Preserve morphology and integrity of precious tissue with the unique Covertile system that allows you to dispense reagents in a highly-controlled and more consistent manner. 91% of customers find the stain quality and reproducibility to be better than the competition.*

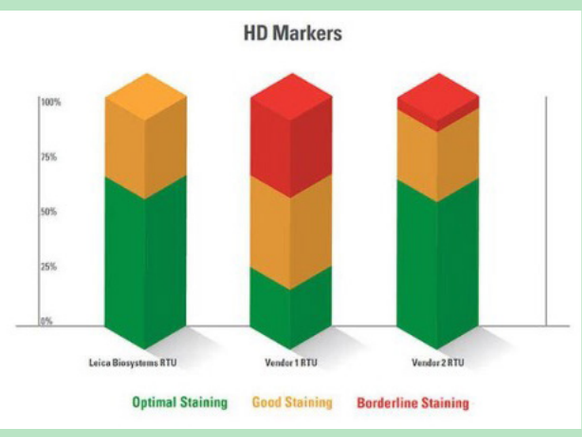
Designed with the user in mind, everything from immediate reagent access with real-time measurements/alerts and greater flexibility over the competition to swap out reagents during protocol runs, to the intuitive user interface and case management with 3 independent trays, makes the BOND-III instrument the ultimate team player to meet your lab's needs.

***Independent Studies**

Proven Staining Quality = Quality Pathologists Can Trust

With in-house development of our antibodies and the complete BOND system – instrument, antibodies, diluent, and detection working together in an optimized manner delivering real-world performance.

Our Novocastra reagent solutions include fully-automated and ready-to-use (RTU) antibodies, probes, detection systems, and ancillaries, empowering labs to deliver high-quality and reliable staining to support patient care.



Novocastra HD Antibodies Deliver Higher Optimal Staining Rates Compared to Leading Vendors

To deliver the performance you demand, our Novocastra HD line is independently evaluated by external quality assurance organization NordiQC. Head-to-head comparisons against other leading vendors show that our antibodies consistently deliver quality staining.

FEATURED PRODUCTS
CEREBRO Specimen Tracking and Workflow Management

Don't let identification errors lead to patient harm. CEREBRO is a specimen tracking and workflow management system for all AP specimens implementing a documented chain of custody. Now, you can go home at the end of each day confident that every patient specimen will reach the pathologist for diagnosis as quickly as possible.

ID confirmed. All specimens accounted for. Every task complete.

With CEREBRO, scanning the specimen ID actively verifies case details. At each stage you confirm the link between the specimen and the patient, verify no specimens are overlooked, and ensure tasks are correctly completed.

When quality and patient safety are paramount.

CEREBRO is an automated, standardized, lab management tool which cultivates adherence and accountability for critical processes in your specimen processing workflow.

FEATURED PRODUCTS
VISION24 End-to-end portfolio solutions

VISION24 is our thorough approach to pathology workflow optimization that strives to enable clinicians to efficiently provide patients a highly confident diagnosis within 24 hours of biopsy. VISION24 looks to achieve this goal by optimizing both the physical and data workflows within a pathology laboratory.

The Leica Biosystems difference

Leica Biosystems is dedicated to providing a thorough analysis of your entire pathology workflow from specimen collection to diagnosis.

Our expert consultants will work closely with you to identify unique challenges and provide access to world-class tools necessary to develop sustainable solutions.

Through this cooperation, Leica Biosystems can provide tailor-made recommendations geared to optimize your pathology workflow.

Advancing Cancer Diagnostics
Improving Lives

Leica Biosystems is a global leader in workflow solutions and automation. As the only company to own the workflow from biopsy to diagnosis, we are uniquely positioned to break down the barriers between each of these steps. Our mission of “Advancing Cancer Diagnostics, Improving Lives” is at the heart of our corporate culture. Our easy-to-use and consistently reliable offerings help improve workflow efficiency and diagnostic confidence. The company is represented in over 100 countries. It has manufacturing facilities in 9 countries, sales and service organizations in 19 countries, and an international network of dealers. The company is headquartered in Nussloch, Germany.

Visit LeicaBiosystems.com for more information.
www.leicabiosystems.com

For In Vitro Diagnostic Use

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