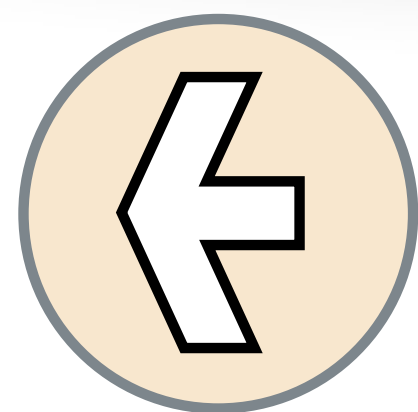




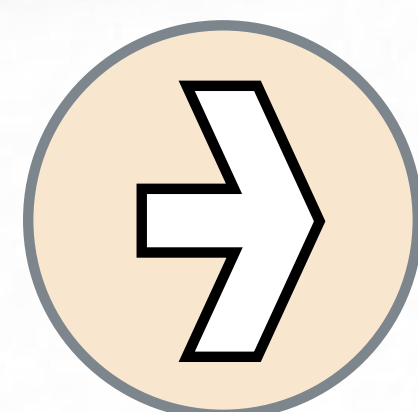
# Automated Solutions for ELISA

Enzyme-linked immunosorbent assays (ELISAs) are a common analytical tool for detecting the presence and concentration of a protein or other molecules of interest. Despite the ELISA method used, numerous reagent additions, wash steps, and incubation times make this workflow a labor-intensive endeavor with susceptibility to human error and variability in results. Automation of these steps relieves the labor burden with improved throughput and consistency.

## Your Guide to Workflow Intelligence



Review our solutions by **Workstations**



Review our **ELISA** solutions

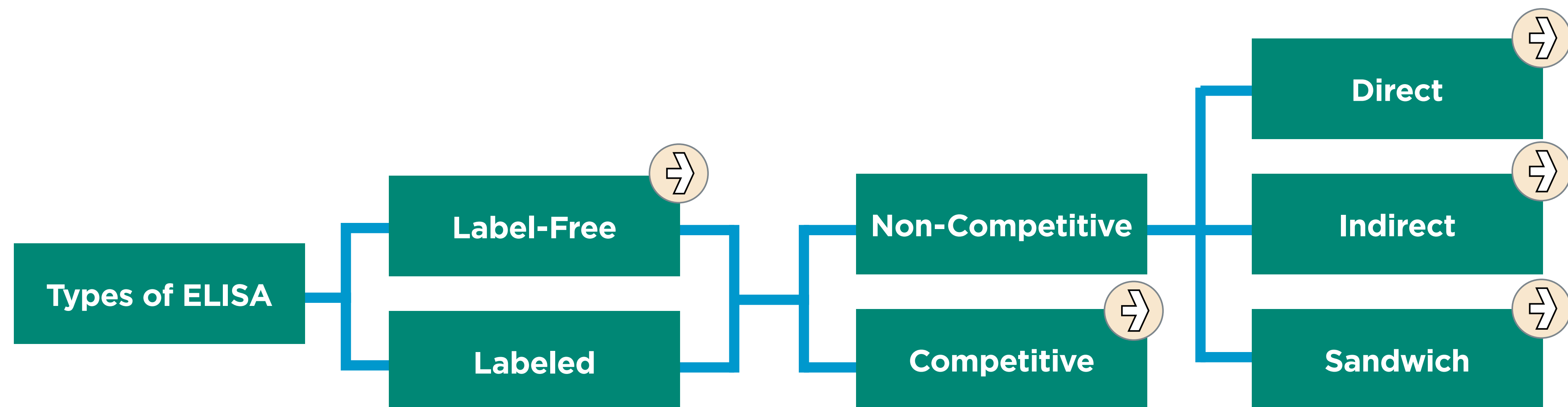


# Automated i-Series ELISA Solutions

## Flexible and scalable to meet your growing needs

ELISA has been a common practice in the biology research laboratory since the 1970's. Despite its widespread for adoption in industry, its variability in results, susceptibility to human error, labor intensive workflow, and slow time-to-result remain hurdles for users looking to adopt ELISA in med to high throughput applications.

The Biomek automated workstation increases consistency of your ELISA method while increasing throughput. The flexibility of the i-Series workstations allows you to do as little or as much as you need, whether you're doing a simple or a complex ELISA assay.





# Label-Free ELISA Manual vs Automated

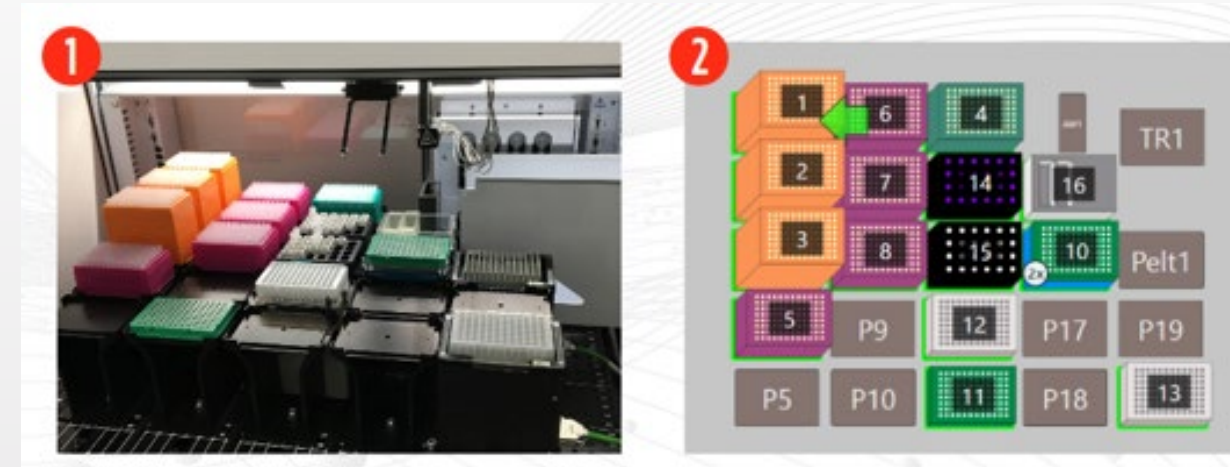
## Manual standalone: limited throughput

Repeat

- 1 Preparation of the label free analyzer
- 2 Prepare sample plates
- 3 Place plates on-board the analyzer for processing
- 4 Collect data and analyze
- 5 Remove processed plates

## Integrated: walk-away, increased throughput

- 1 Prepare your i-Series ELISA Workstation
- 2 Verify accuracy in 5 seconds for assurance



- 3 Select your pre-programmed application, push start and **walk-away!**



Monitor activity and access results at your desk

Your i-Series ELISA Workstation precisely prepares sample plates and processes each per your protocol, capturing all activities and data generated per sample and per well.

**You are free to work on other tasks!**



View i5 Label-Free ELISA Workstation

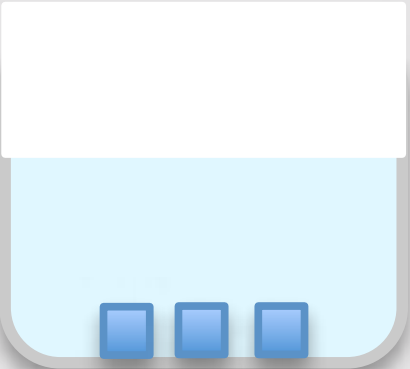

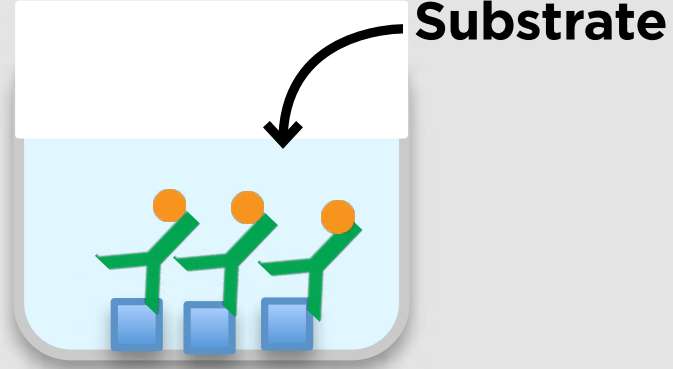



View i7 label-Free ELISA Workstation


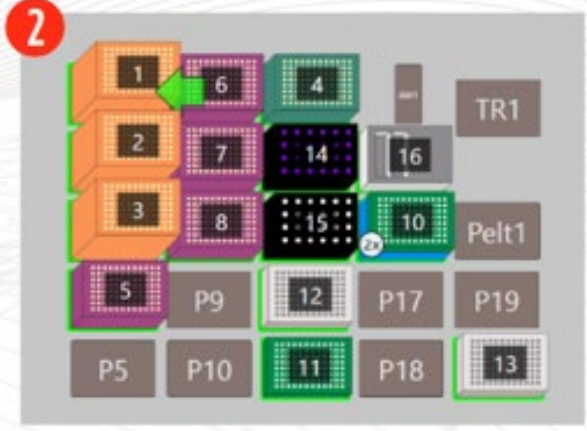



# Direct Labeled ELISA Manual vs Automated

## Manual: labor intensive, prone to error, limited throughput

- 1 Preparation of reagents and equipment
- 2 Immobilization of the target protein (or a target antibody)
  - Add target protein solution
  - Incubate
  - Wash 3- 5 x
- 3 Add blocking buffer
  - Incubate
  - Wash 3- 5 x
- 4 Prepare and add standards, controls and samples (enzyme-labeled antibody)
  - Might need dilution before addition
  - Incubate
  - Wash 3- 5 x
- 5 Add a substrate solution
  - Incubate
- 6 Add a stop solution
  - Measure activity
- 7 Collect data and analyze

## Integrated: walk-away, increased throughput

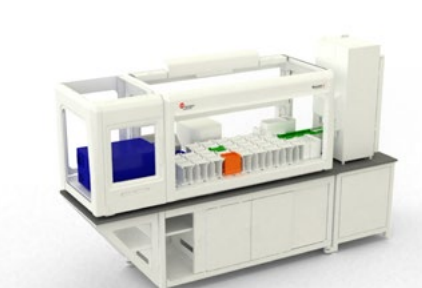
- 1 Prepare your i-Series ELISA Workstation
  - 2 Verify accuracy in 5 seconds for assurance
    -  
  - 3 Select your pre-programmed application, push start and **walk-away!**
    - 
- Monitor activity and access results at your desk

Your i-Series ELISA Workstation precisely prepares sample plates and processes each per your protocol, capturing all activities and data generated per sample and per well.

**You are free to work on other tasks!**



View i5 ELISA Workstation



View i7 ELISA Workstation



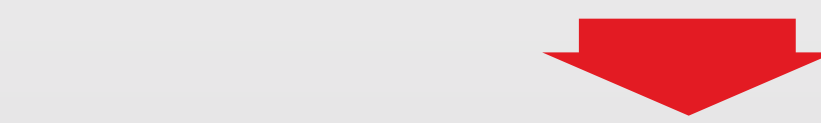
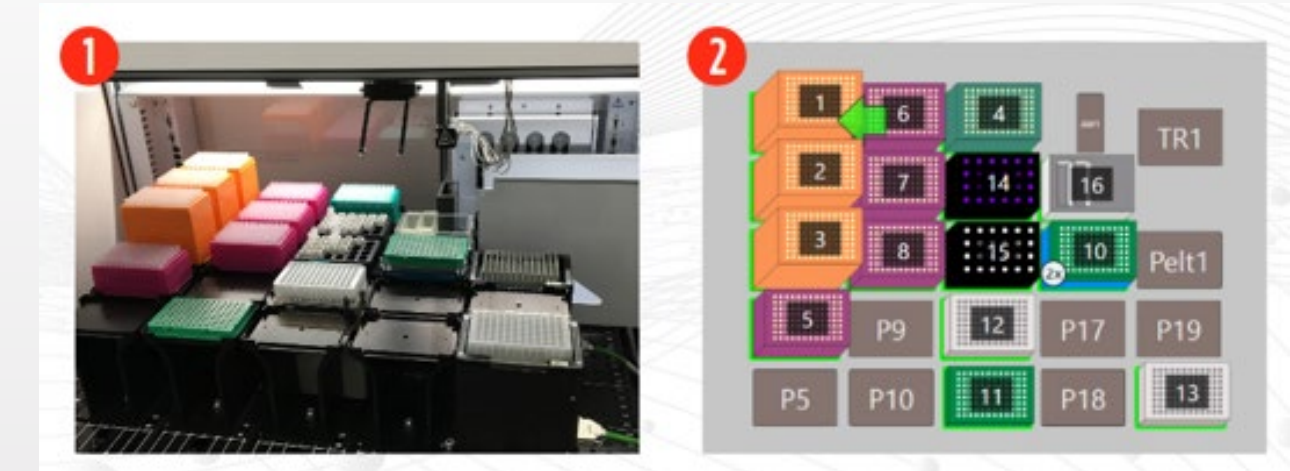
# Indirect Labeled ELISA Manual vs Automated

## Manual: labor intensive, prone to error, limited throughput

- 1 Preparation of reagents and equipment
- 2 Immobilization of the target protein (or a target antibody)
  - Add target protein solution
  - Incubate
  - Wash 3- 5 x
- 3 Add blocking buffer
  - Incubate
  - Wash 3- 5 x
- 4 Prepare and add standards, controls and primary antibody
  - Incubate
  - Wash 3- 5 x
- 5 Add secondary antibody
  - Incubate
  - Wash 3- 5 x
- 6 Add a substrate solution
  - Incubate
- 7 Add a stop solution
  - Measure activity
- 8 Collect data and analyze

## Integrated: walk-away, increased throughput

- 1 Prepare your i-Series ELISA Workstation
- 2 Verify accuracy in 5 seconds for assurance
- 3 Select your pre-programmed application, push start and **walk-away!**



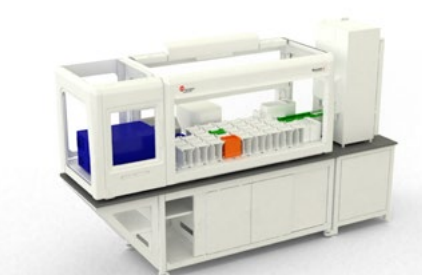
Monitor activity and access results at your desk

Your i-Series ELISA Workstation precisely prepares sample plates and processes each per your protocol, capturing all activities and data generated per sample and per well.

**You are free to work on other tasks!**



View i5 ELISA Workstation




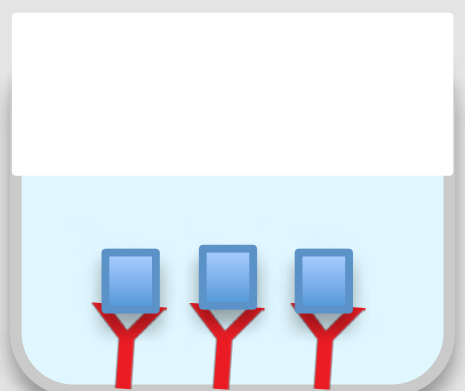

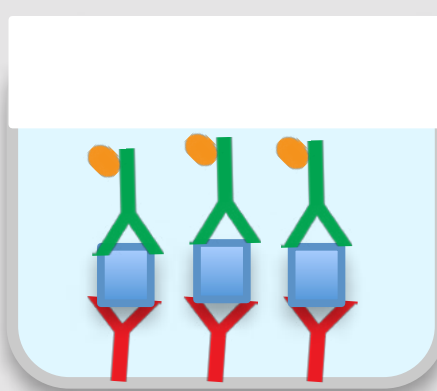

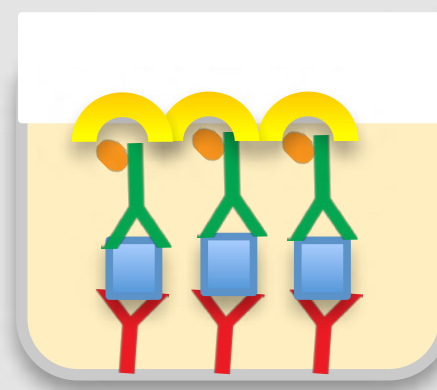


View i7 ELISA Workstation



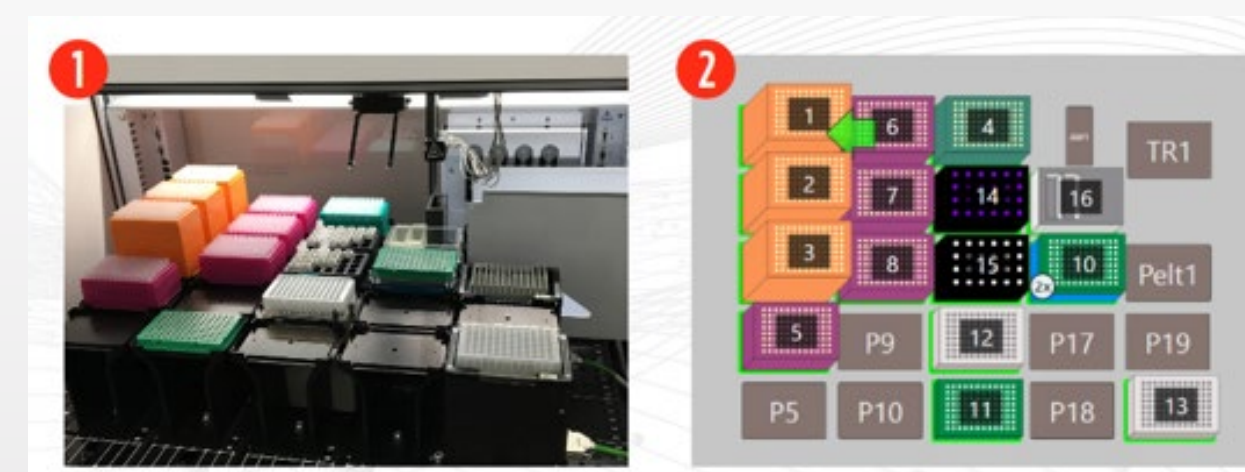
# Sandwich Labeled ELISA Manual vs Automated

## Manual: labor intensive, prone to error, limited throughput

- 1 **Preparation of reagents and equipment**
- 2 **Immobilization of target antibody**  
Add target antibody solution   
Incubate  
Wash 3- 5 x  

- 3 **Add blocking buffer**  
Incubate  
Wash 3- 5 x
- 4 **Prepare and add standards, controls and sample (target protein)**   
Incubate  
Wash 3- 5 x  

- 5 **Add target protein specific antibody**   
Incubate  
Wash 3- 5 x  

- 6 **Add Substrate**   
Measure activity  

- 7 **Collect data and analyze**

## Integrated: walk-away, increased throughput

- 1 **Prepare your i-Series ELISA Workstation**
- 2 **Verify accuracy in 5 seconds for assurance**
- 3 **Select your pre-programmed application, push start and **walk-away!****



**Monitor activity and access results at your desk**

Your i-Series ELISA Workstation precisely prepares sample plates and processes each per your protocol, capturing all activities and data generated per sample and per well.

**You are free to work on other tasks!**



View i5 ELISA Workstation

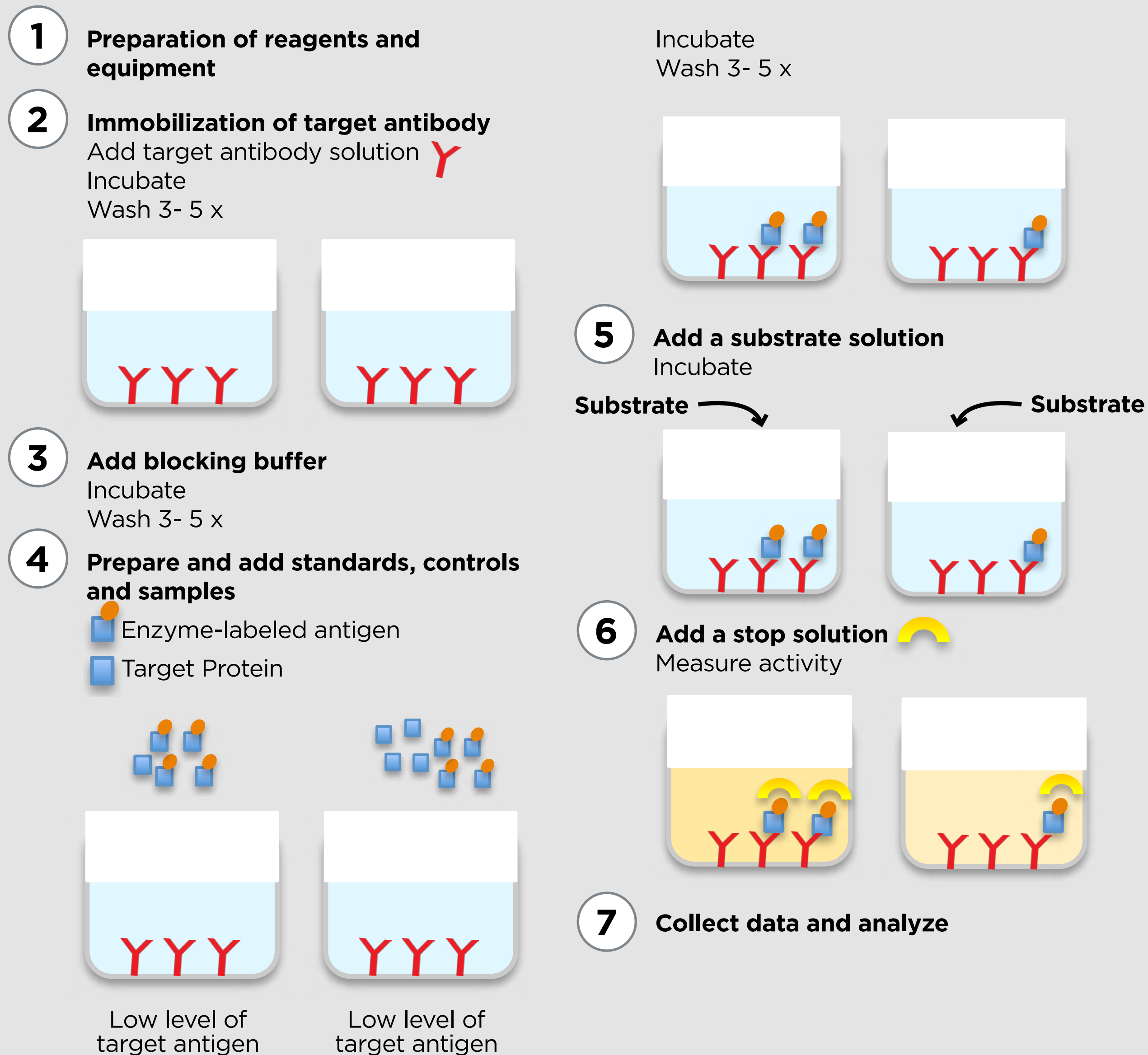


View i7 ELISA Workstation



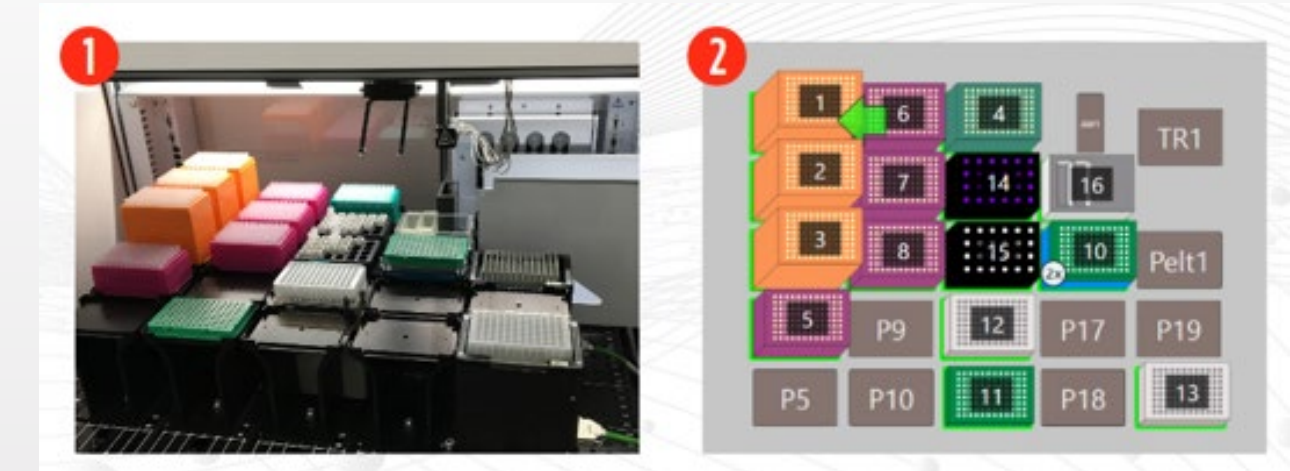
# Competitive Labeled ELISA Manual vs Automated

## Manual: labor intensive, prone to error, limited throughput



## Integrated: walk-away, increased throughput

- Prepare your i-Series ELISA Workstation**
- Verify accuracy in 5 seconds for assurance**
- Select your pre-programmed application, push start and **walk-away!****



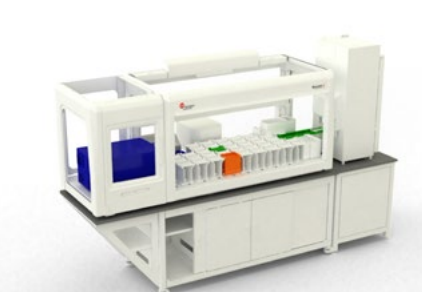
Monitor activity and access results at your desk

Your i-Series ELISA Workstation precisely prepares sample plates and processes each per your protocol, capturing all activities and data generated per sample and per well.

**You are free to work on other tasks!**



View **i5 ELISA Workstation**



View **i7 ELISA Workstation**



# Workstation Solutions

## Flexible and scalable to meet your growing needs

The Biomek automated workstations combine 30 years of system innovation with data centric software to deliver the confidence needed to walk away from the bench and allow your Biomek system to handle a variety of ELISA tests, managing repetitive steps associated with multiple dispensing, washing, and incubation steps.

We understand that each lab is unique. Depending on your workflow and requirements, we can provide an integrated solution that combines liquid handling automation with laboratory equipment of your choice to meet your specific ELISA applications.



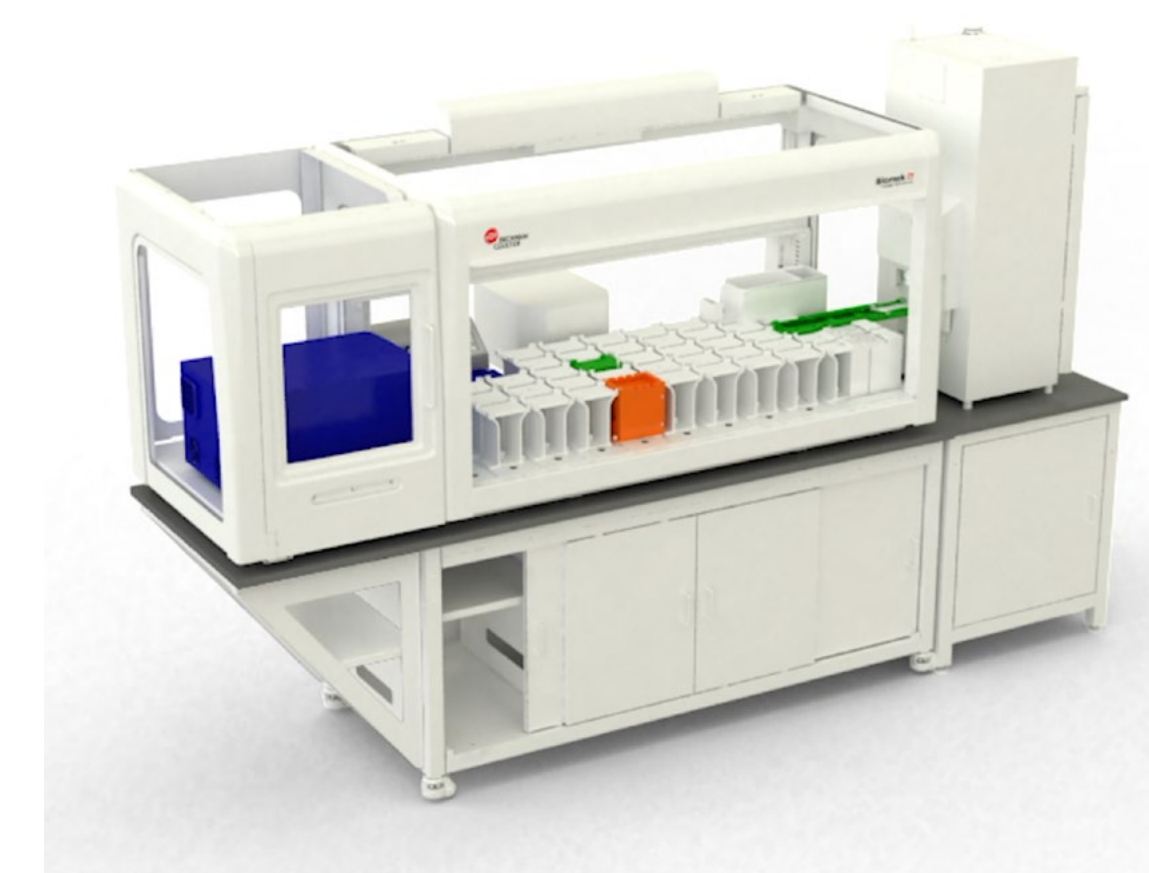
**i5 Label-Free ELISA**



**i7 Label-Free ELISA**



**i5 ELISA**

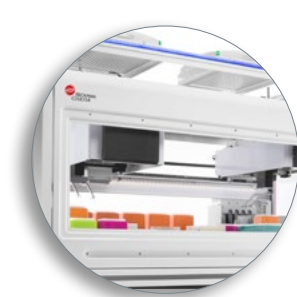


**i7 ELISA**



# i5 Label-Free ELISA

Despite ELISA's widespread adoption in the industry, its variability and slow time-to-result remain the big hurdles for users looking to adopt ELISA in high throughput applications. The integration of the Octet system with the i-Series workstation offers an excellent alternative solution, enabling a label-free format whether you're doing a simple assay or complex screening. **OUR SOLUTIONS:**



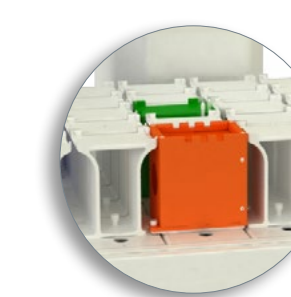
## Biomek Automated Workstation

- Continuous preparation of the standards and controls: precise and consistent dilution to establish an accurate standard curve.
- On-time processing of the plates to and from your direct ELISA analyzer and incubator to ensure timely processing and reading while improving capacity.
- Contamination-controlled environment with enclosure, HEPA filter\*, & Biomek "Hold Labware" SW feature.



## Integrated Direct ELISA Method such as Octet® Systems

- Measure protein concentration and binding kinetics



## Automated Labware Positioners (ALPs)

- Perform application specific tasks such as shaking or heating on the deck to expedite processing the plates



## Integrated Hotel

- Increase throughput without need for intervention



## Biomek Validated Disposable Tips

- Certified endotoxin-free and trace metal-free to eliminate contamination
- Volume capacity: 30µl to 1070µl



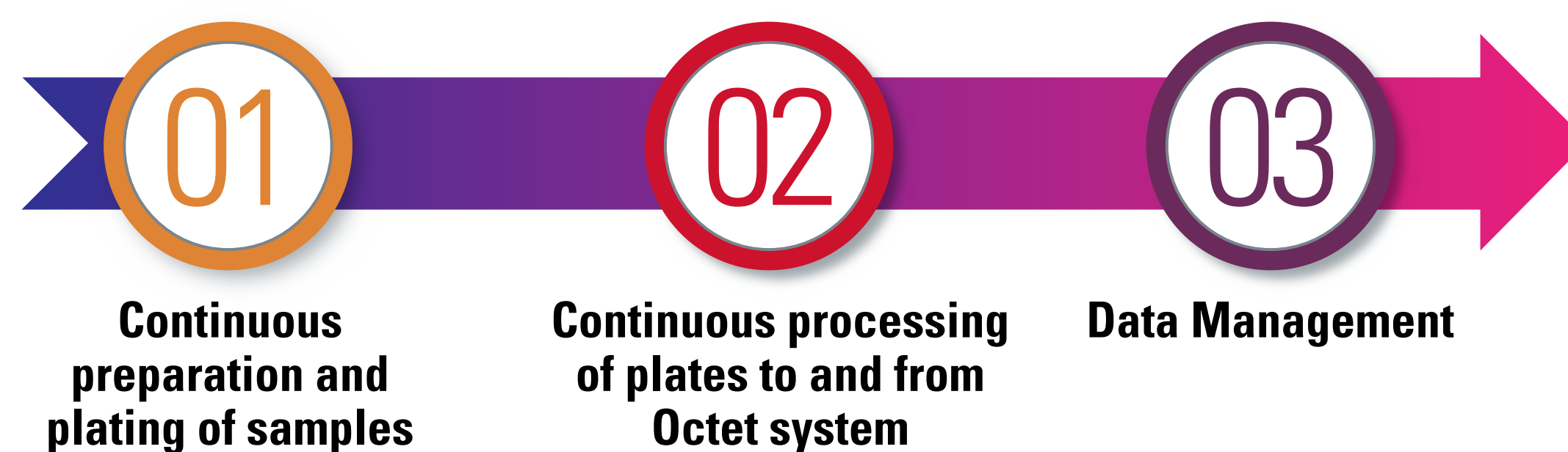
## Biomek Suite of Software

- SAMI EX: controls plate movements to and from integrated devices per scheduled time providing high consistency.
- DART: links sample identification and assay results throughout the process



## Integrated Incubator

- Consistent storage of the plates undergoing experimental assays





# i5 Label-Free ELISA

Example of a workstation



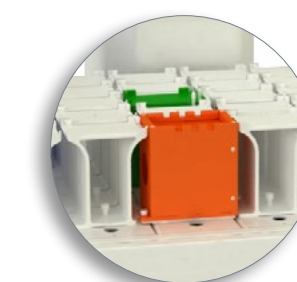
GO

**Biomek  
Automated  
Workstation**



GO

**Biomek Suite of  
Software**



GO

**Automated Labware  
Positioners (ALPs)**



GO

**Biomek Validated  
Disposable Tips**



GO

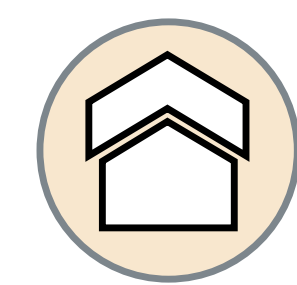
**Integrated Direct  
ELISA Method such  
as Octet® Systems**



**Integrated  
Hotel**



**Integrated  
Incubator**



HOME



# i7 Label-Free ELISA

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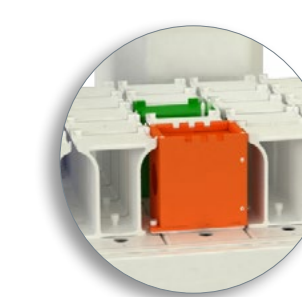
## Integrated Direct ELISA Method such as Octet® Systems

- Measure protein concentration and binding kinetics



## Integrated Incubator

- Consistent storage of the plates undergoing experimental assays



## Automated Labware Positioners (ALPs)

- Perform application specific tasks such as shaking or heating on the deck to expedite processing the plates
- Increase throughput when space is limited for off-deck hotel (labware feeder)



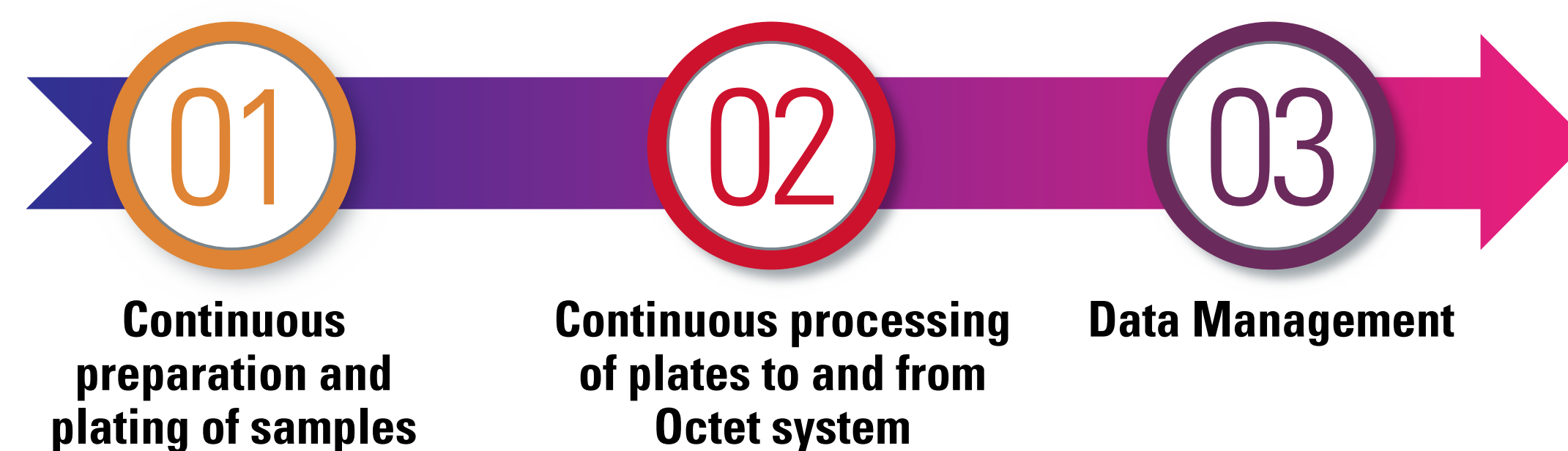
## Biomek Validated Disposable Tips

- Certified endotoxin-free and trace metal-free to eliminate contamination
- Volume capacity: 30µl to 1070µl

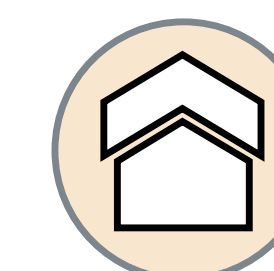


## Biomek Suite of Software

- SAMI EX: controls plate movements to and from integrated devices per scheduled time providing high consistency.
- DART: links sample identification and assay results throughout the process



View i7 Label-Free ELISA Workstation

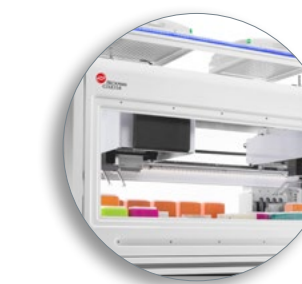


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# i7 Label-Free ELISA

Example of a workstation



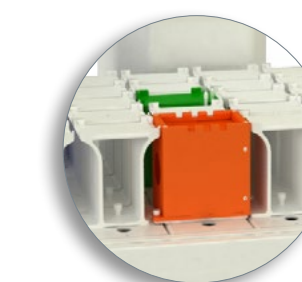
GO

**Biomek  
Automated  
Workstation**



GO

**Biomek Suite of  
Software**



GO

**Automated Labware  
Positioners (ALPs)**



GO

**Biomek Validated  
Disposable Tips**



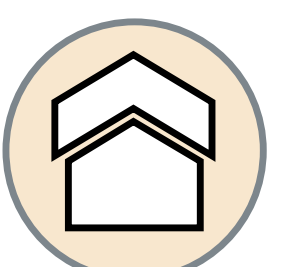
GO

**Integrated Direct  
ELISA Method such  
as Octet® Systems**



GO

**Integrated  
Incubator**



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# i5 Labeled ELISA

Optimal ELISA method depends on precise preparation of the plates, standards, controls, and samples through accurate and consistent pipetting, washing, incubation scheduling, and timely reading. The flexibility of the i-Series workstations allows you to do as little or as much as you need, whether you're doing a simple or complex ELISA assay. **OUR SOLUTIONS:**



## Biomek Automated Workstation

- Preparation of the ELISA plates: addition of known antigen or antibody & blocking agent per set protocol, improving consistency and uniformity across all plates and wells.
- Preparation of the standards and controls: precise dilution to reach the concentrations needed to establish an accurate standard curve.
- Precise dispensing of samples and timely processing of the plates during incubation steps to ensure accuracy and consistency across all samples and plates.
- Gentle handling through controlled speed, minimizing human error during washing steps.
- On-time processing of the plates after stopping ELISA reaction through direct integration with a reader to ensure timely reading of your ELISA plates, while improving capacity for continuous production
- Contamination-controlled environment with enclosure, HEPA filter, & Biomek "Hold Labware" SW feature.



## Biomek Suite of Software

- Biomek SW: on-time processing of each plate per your protocol reducing the chance for evaporation and/or light exposure of highly sensitive and expensive antibodies.
- SAMI EX: controls plate movements to and from integrated devices per scheduled time providing high consistency.
- DART: links sample identification and assay results throughout the process



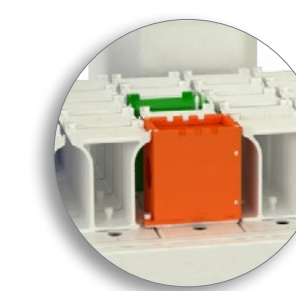
## Integrated Hotel

- Increase throughput without need for intervention



## Integrated Incubator

- Consistent storage of the plates undergoing experimental assays



## Automated Labware Positioners (ALPs)

- Perform application specific tasks such as shaking or heating on the deck to expedite processing the plates



## Biomek Validated Disposable Tips

- Certified endotoxin-free and trace metal-free to eliminate contamination
- Volume capacity: 30µl to 1070µl



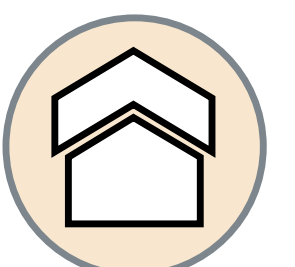
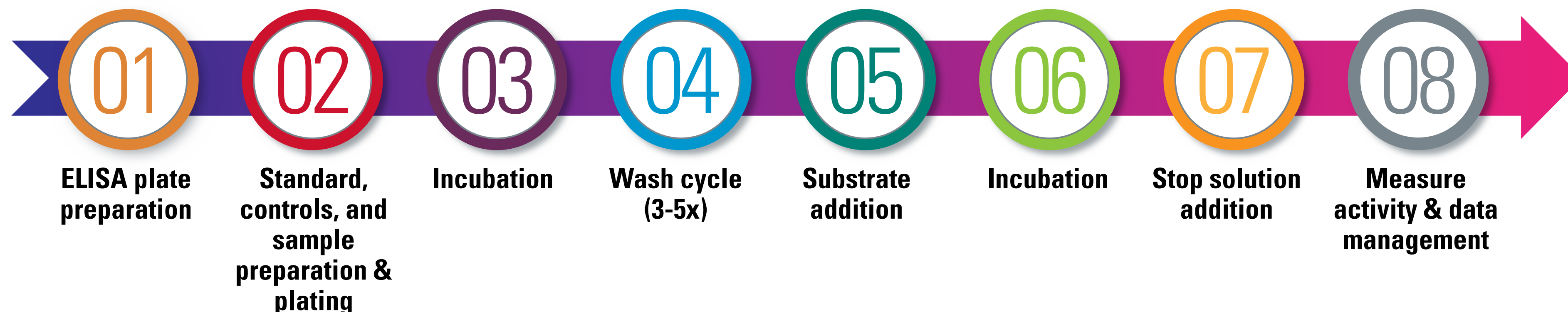
## Integrated Reader such as SpectraMax i3X System

- Timely reading of the ELISA plates



## Integrated Plate Washer

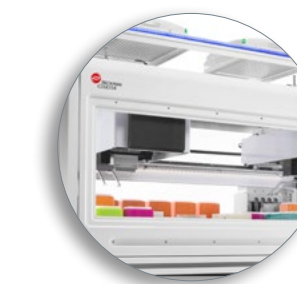
- Rapid addition and removal of wash buffers for ELISA





# i5 Labeled ELISA

Example of a workstation



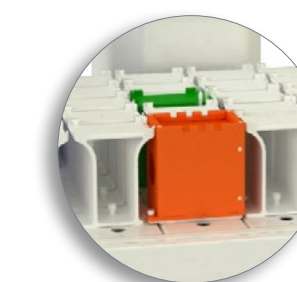
GO

**Biomek  
Automated  
Workstation**



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**Biomek Suite of  
Software**



GO

**Automated Labware  
Positioners (ALPs)**



GO

**Biomek Validated  
Disposable Tips**

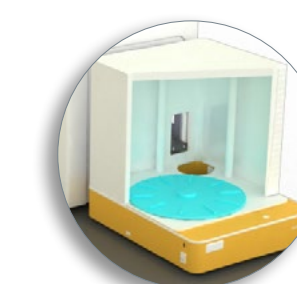


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**Integrated Reader  
such as SpectraMax  
i3X System**



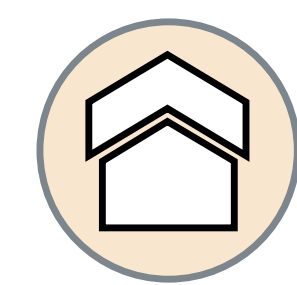
**Integrated  
Plate Washer**



**Integrated  
Hotel**



**Integrated  
Incubator**



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# i7 Labeled ELISA

Optimal ELISA method depends on precise preparation of the plates, standards, controls, and samples through accurate and consistent pipetting, washing, incubation scheduling, and timely reading. The flexibility of the i-Series workstations allows you to do as little or as much as you need, whether you're doing a simple assay or complex screen. **OUR SOLUTIONS:**



## Biomek Automated Workstation

- Preparation of the ELISA plates: addition of known antigen or antibody & blocking agent per set protocol, improving consistency and uniformity across all plates and wells.
- Preparation of the standards and controls: precise dilution to reach the concentrations needed to establish an accurate standard curve.
- Precise dispensing of samples and timely processing of the plates during incubation steps to ensure accuracy and consistency across all samples and plates.
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- On-time processing of the plates after stopping ELISA reaction through direct integration with a reader to ensure timely reading of your ELISA plates, while improving capacity for continuous production
- Contamination-controlled environment with enclosure, HEPA filter, & Biomek "Hold Labware" SW feature.



## Biomek Suite of Software

- Biomek SW: on-time processing of each plate per your protocol reducing the chance for evaporation and/or light exposure of highly sensitive and expensive antibodies.
- SAMI EX: controls plate movements to and from integrated devices per scheduled time providing high consistency.
- DART: links sample identification and assay results throughout the process



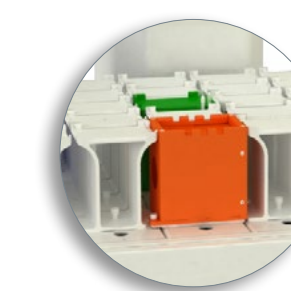
## Integrated Incubator

- Consistent storage of the plates undergoing experimental assays



## Integrated Plate Washer

- Rapid addition and removal of wash buffers for ELISA



## Automated Labware Positioners (ALPs)

- Perform application specific tasks such as shaking or heating on the deck to expedite processing the plates



## Biomek Validated Disposable Tips

- Certified endotoxin-free and trace metal-free to eliminate contamination
- Volume capacity: 30µl to 1070µl



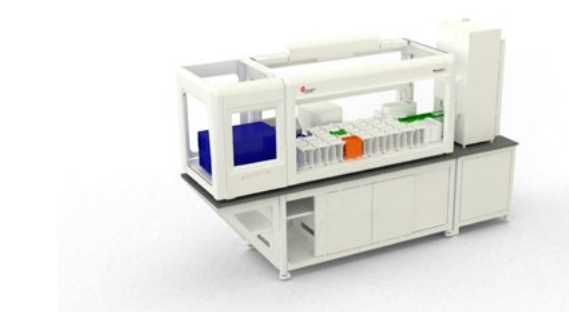
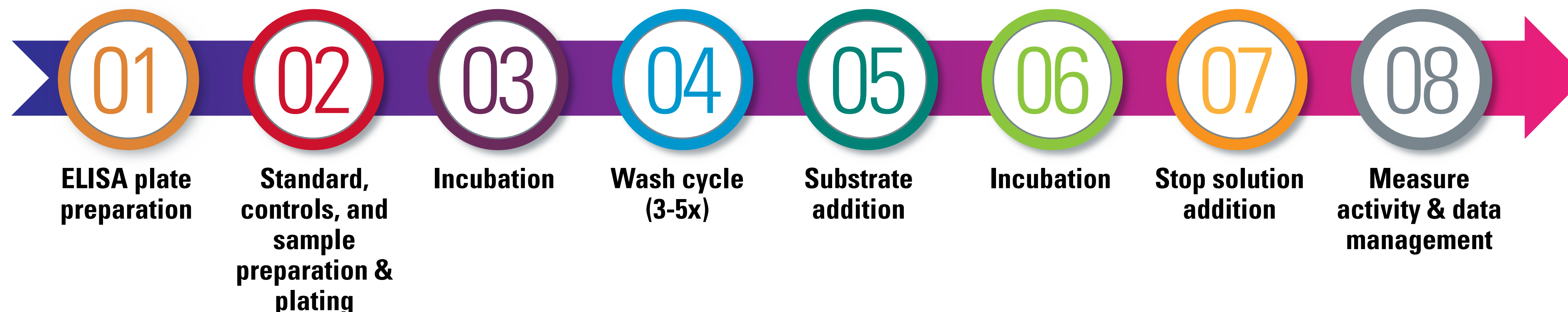
## Integrated Reader such as SpectraMax i3X System

- Timely reading of the ELISA plates



## Integrated Centrifuge

- Reliable and efficient sample preparation, ie separation of sera from whole blood





# i7 Labeled ELISA

Example of a workstation



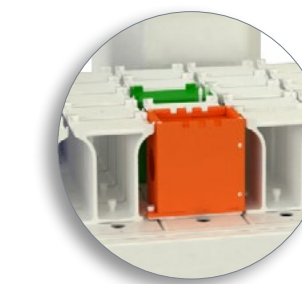
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**Biomek  
Automated  
Workstation**



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**Biomek Suite of  
Software**



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**Automated Labware  
Positioners (ALPs)**



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**Biomek Validated  
Disposable Tips**



**Integrated  
Plate Washer**



GO

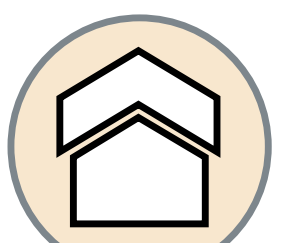
**Integrated Reader  
such as SpectraMax  
i3X System**



**Integrated  
Incubator**



**Integrated  
Centrifuge**



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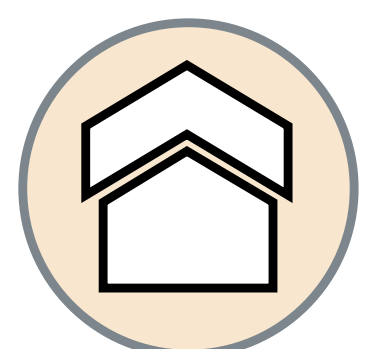


# Biomek Automated Workstation

**Improve throughput, consistency and uniformity across your ELISA method**

- Automate preparation of ELISA plates, standards and controls to ensure consistency and establish an accurate standard curve.
- Increase precision through accurate dispensing of samples
- Increase consistency through controlled and timely processing of the plates
- Minimize human error during multiple washing steps
- Improve efficiency by directly integrating required components
- Simplify serial dilutions with built-in spanning transfer system
- Improve analysis efficiency with sample and data tracking\*
- Take control of multi-day planning\*
- Monitor progress with platform status light
- Remote system monitoring using on-deck cameras

\*Possible through optional software packages DART and SAMI.



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# Suite of SW

Every time your sample moves, data moves. Biomek suite of software provides the most flexibility for modification, multi-day planning and data quality. Automatic data tracking and storage saves time and eliminates manual data handling errors. Few highlights include:

## **DART: Data Acquisition and Reporting Tool**

- Gather data and synthesis runtime information.
- Generate data reports via MS Excel table and pivot views, and SQL views.
- Integrate with your Laboratory Information Management System for automatic data transfer.

## **SAMI EX**

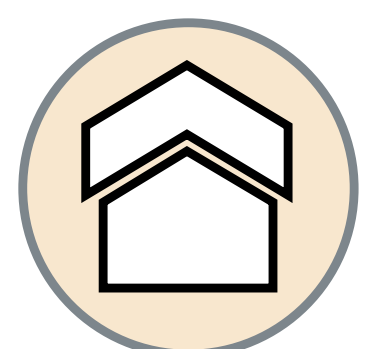
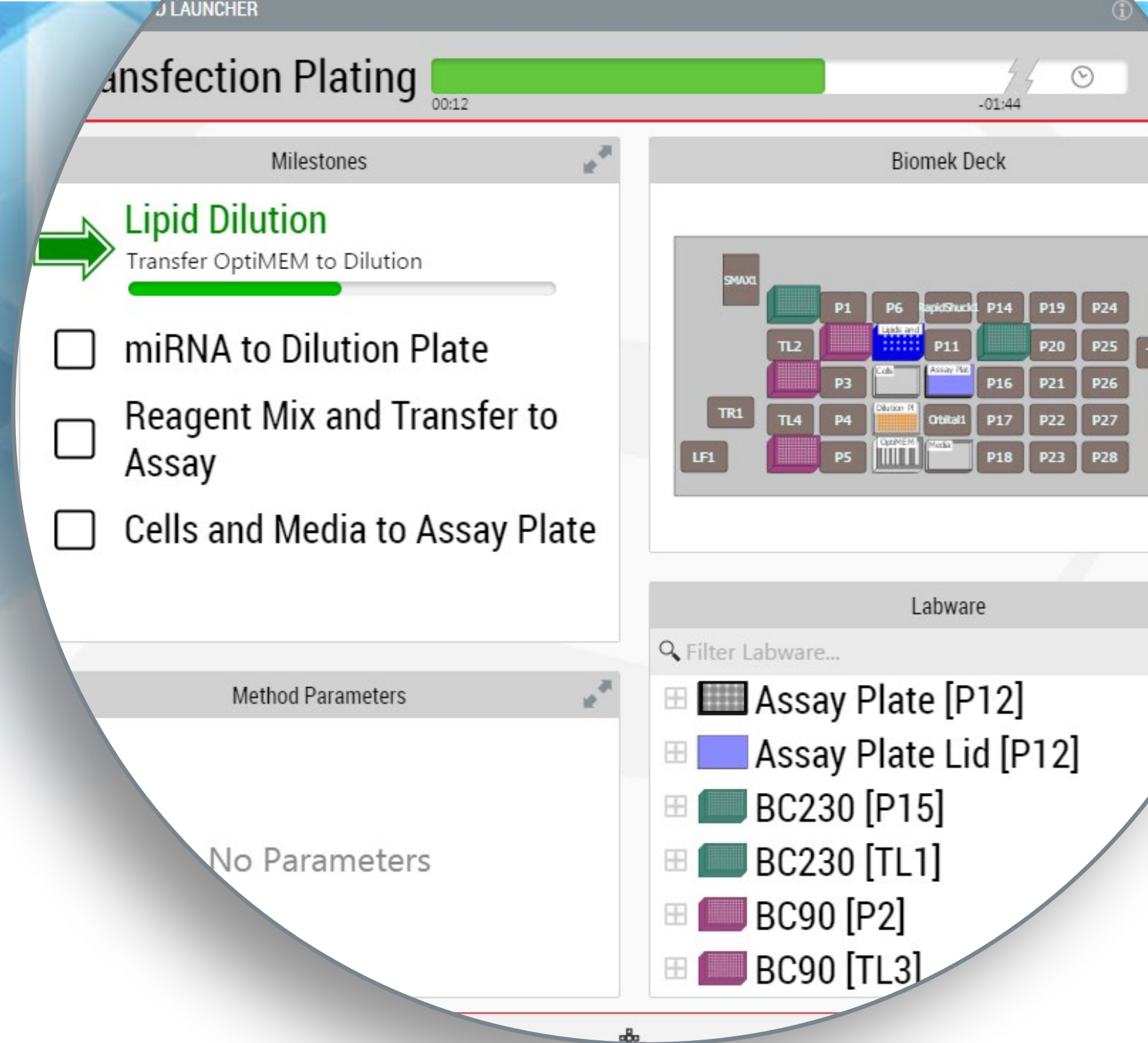
- Create schedules with the benefits of an optimized, predictable static schedule.
- Save process time and control method variation with interleaving sub-processes.
- Use live data to drive methods/processes.

## **SAMI Process Management**

- Use this calendar organizational tool to add, monitor, and plan for multiple methods and other events.
- Schedule and run multiple processes simultaneously.
- Integrate long-running processes into a centralized, visual workflow management tool.

## **Biomek Method Launcher**

- Select, set up, run, and track methods in a few simple mouse clicks.



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# DeckOptix Final Check

Address Setup Errors Before Your Run

## Labware Issues Cause the Most Frequent Crashes

Missing or misplaced labware caused crashes\*:

- 75% have a labware related crash every few months

## Crashes are Expensive

Crash Recovery Takes More than a Day for Most Labs

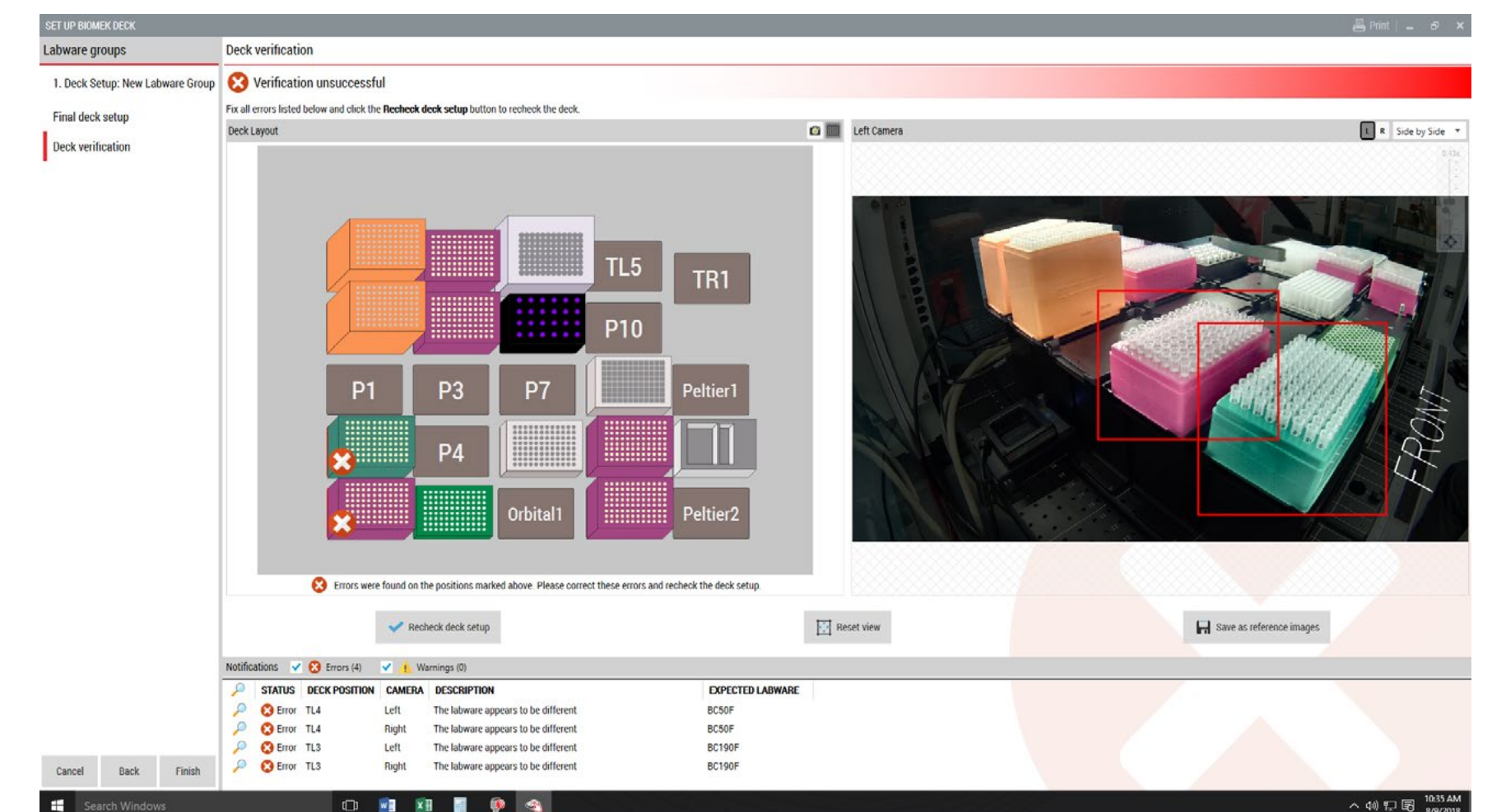


Samples are compromised approx. 50% of the time

Crash costs \$5k-\$10k, but can be up to \$100K



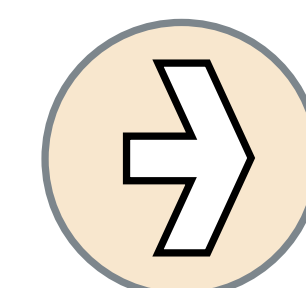
## Detection in only a few seconds



### Recognizes:

- 1 Missing/Misplaced Labware
- 2 Wrong Beckman tip type
- 3 Wrong labware type
  - Based on color: black, white, all colors, & clear/translucent plates
  - Based on height: standard vs. deep well

\* Survey Data at Beckman Coulter Headquarter in Indianapolis

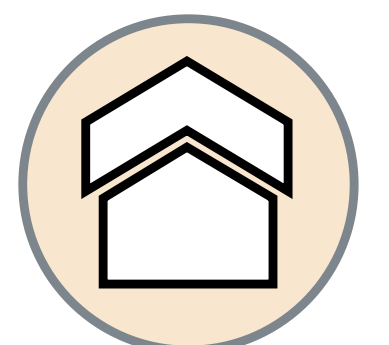


Continue

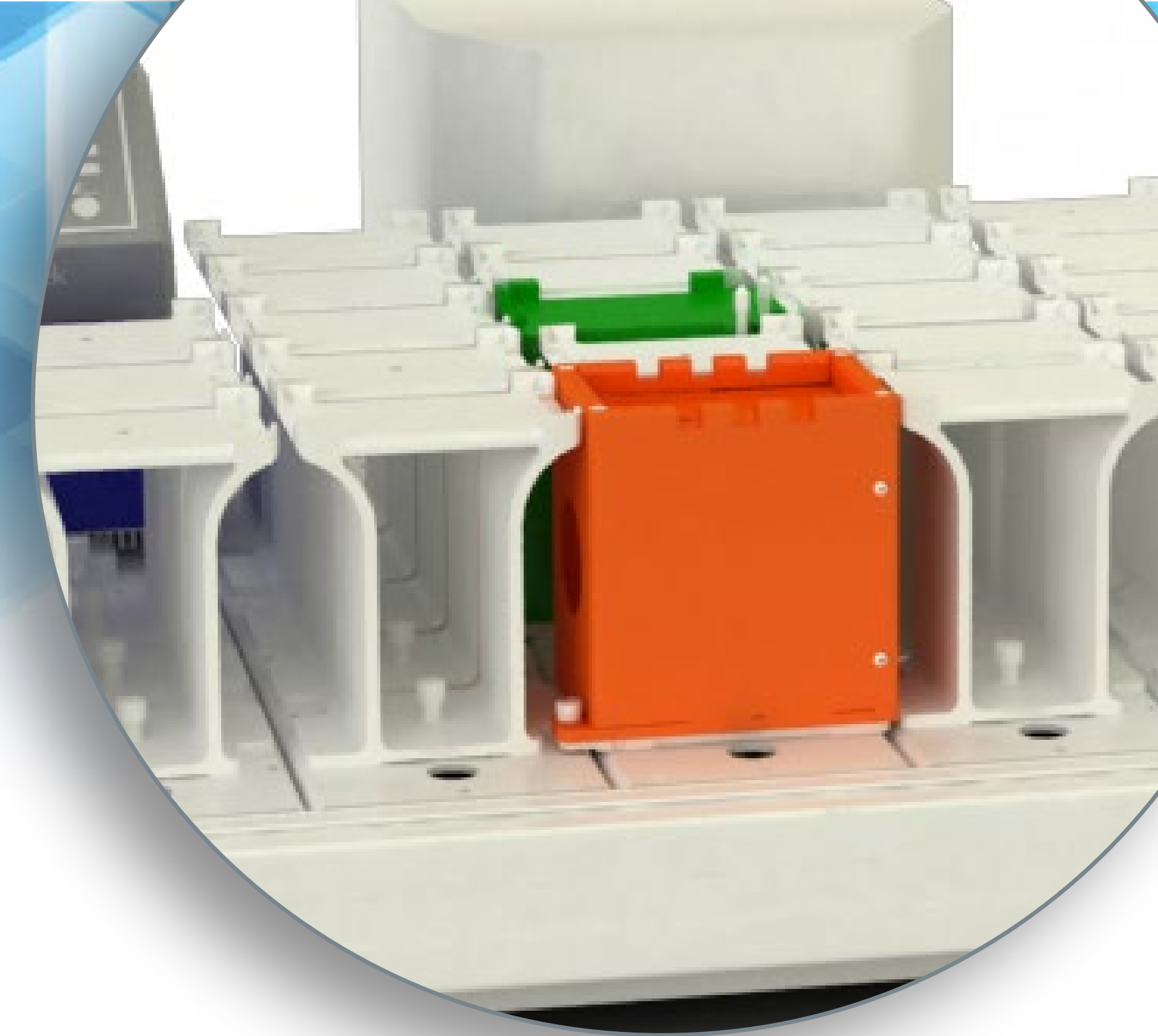


# Biomek Validated Disposable Tips

- Validated and approved for use on Biomek systems
- Color-coded racks already in Biomek software for ease of use
- Range of volume capacities from 30µl to 1070µl
- Wide selection including:
  - Wide bore to prevent cell shearing
  - Filtered to prevent contamination
  - Conductive to enable liquid level sensing (span-8 pod)
- Biomek pipette tips from Beckman Coulter are certified to be:
  - Endotoxin-free
  - Pyrogen-free
  - Trace metal-free
  - Sterile
  - Sterile filtered
  - RNase- and DNase-free







# Automated Labware Positioners (ALPs)

Workstation-integrated and interchangeable components that perform specific tasks. ALPs make it possible to configure the platform for accommodation of a wide range of applications.

## Labware Feeder

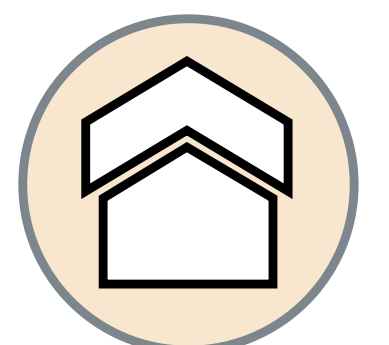
- Increase throughput when space is limited for an off-deck hotel and stackers

## Shaking Peltier

- Used for shaking or gentle mixing of microplates at speeds ranging from 100 rpm to 1400 rpm
- Temperature control capable

## Heating ALP

- Controlled and gentle heating during incubation
- Temperature control capable











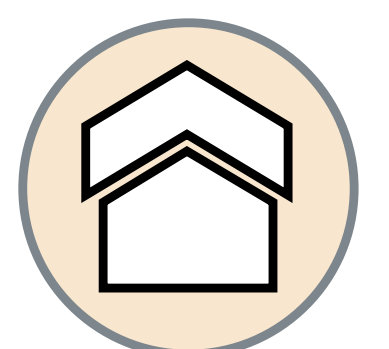
# Integrated SpectraMax<sup>®</sup> i3x Multi-Mode Microplate Reader

From imaging of cell confluence and viability under different treatment conditions to quantitation of nucleic acids and protein to western blot analysis, a wealth of new knowledge is captured using a single instrument.

- Base model includes absorbance, fluorescence, and luminescence read modes for 6- to 384-well microplates
- User-exchangeable detection modules expand the system's detection capabilities
- Engineered for performance with Spectral Fusion<sup>™</sup> illumination for increased sensitivity across the entire excitation range
- Cooled photomultiplier tube (PMT) for improved detection in low light.
- The SpectraMax Injector Cartridge with SmartInject<sup>™</sup> Technology allows for flash based applications, including dual luciferase and ATP assays.
- The SpectraMax MiniMax 300 Imaging Cytometer option allows for live cell imaging and StainFree<sup>™</sup> analysis



View our third-party  
Integrated Solutions



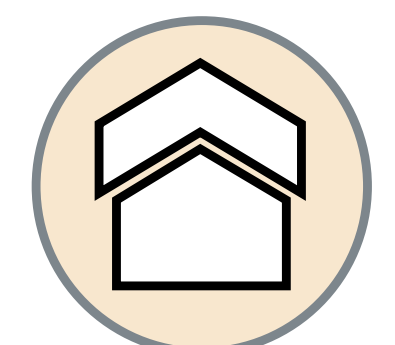
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Beckman's Integrated Solutions team have integrated 300+ third-party devices from 60+ manufacturers to meet your diverse and ever-evolving automation needs. Examples of analyzers integrated:

Purpose	Manufacturer	Model	
Luminescence Microplate Reading	Molecular Devices	SpectraMax L	
	Thermo Fisher Scientific	Luminoskan Ascent	
Microplate Cytometry	Nexcelom Bioscience	Celigo S Cell Imaging Cytometer	
Multimode Microplate Reading	Berthold Technologies	Mithras LB 940	
	BioTek	Cytation 3 Cell Imaging Multi-Mode Reader	
	BioTek	Synergy 2 Multi-Mode Reader	
	BMG LabTech	CLARIOstar	
		FLUOstar OMEGA	
		PHERASTAR FS	
		PHERASTAR Plus	
	Molecular Devices	POLARstar OMEGA	
		FilterMax F3, F5	
		FlexStation 3	
		FLIPR Tetra	
		SpectraMax i3x	
		SpectraMax M2, M2e, M4, M5	
	Perkin Elmer	SpectraMax Paradigm	
		EnSpire	
		EnVision	
	Tecan	Victor, X, 2	
		Infinite F500	
		Infinite M200, M200 PRO, M1000 PRO	
		Infinite M200 PRO NanoQuant	
Nephelometer Microplate Reading	BMG LabTech	NEPHELOstar Plus	

Purpose	Manufacturer	Model
Absorbance Microplate Reading	BioTek	PowerWave HT Microplate Spectrophotometer
	Molecular Devices	EMax Plus
		SpectraMax 190
		SpectraMax 340PC384
		SpectraMax Plus384
		VERSAmax
	Vmax	
Tecan	Sunrise	
Trinean	DropSense96	
Bio-Layer Interferometry Microplate Reading	Forte Bio	Octet HTX
		Octet QK384
		Octet RED384
Capillary Electrophoresis	Advanced Analytical Technologies	Fragment Analyzer
Cell Growth Microplate Imaging	Molecular Devices	CloneSelect Imager
Cell Viability	Beckman Coulter	Vi-Cell XR
Flow Cytometry/Sorting		MoFlo Astrios
Fluorescence Microplate Reading	Molecular Devices	SpectraMax Gemini
	Thermo Fisher Scientific	Fluoroskan Ascent
High Content Imaging	Hamamatsu	FDSS7000EX
	Molecular Devices	ImageXpress Micro XL
	Perkin Elmer	Opera QEHS
	Perkin Elmer	Operetta Imager







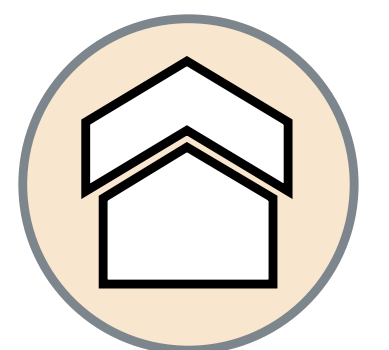
# Disclosures & Copyright Statements

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