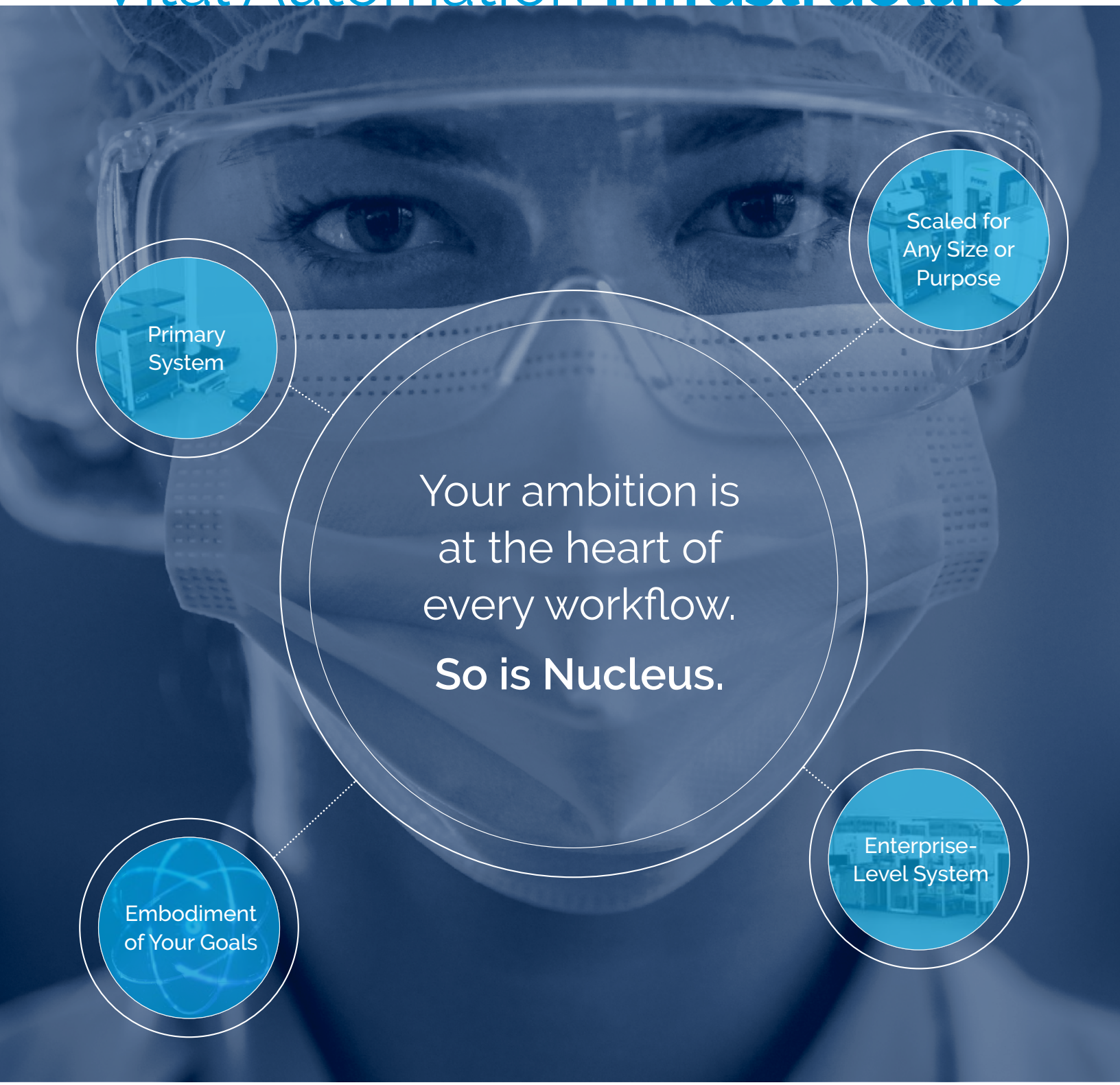
Nucleus®

AUTOMATION INFRASTRUCTURE

POSITIVELY ESSENTIAL

HighRes® biosolutions

Vital Automation **Infrastructure**



Actualize More through Nucleus

Cast aside manual methods and inferior systems that impede your success through size, scope, or specification. Instead, set your sights on Nucleus, automation infrastructure that adapts to your science.

Nucleus is the central framework of any automated workflow; injecting vitality and performance to enable the flow of data to information to insight to boost your competitive edge.

You have the power to bring a fully personalized Nucleus Work Cell to life. You control when and how Nucleus evolves to meet your future needs. Nucleus takes care of the rest.

APPLIED TECHNOLOGIES

CELL BIOLOGY

DRUG DISCOVERY

GENOMIC ANALYSIS

SAMPLE MANAGEMENT

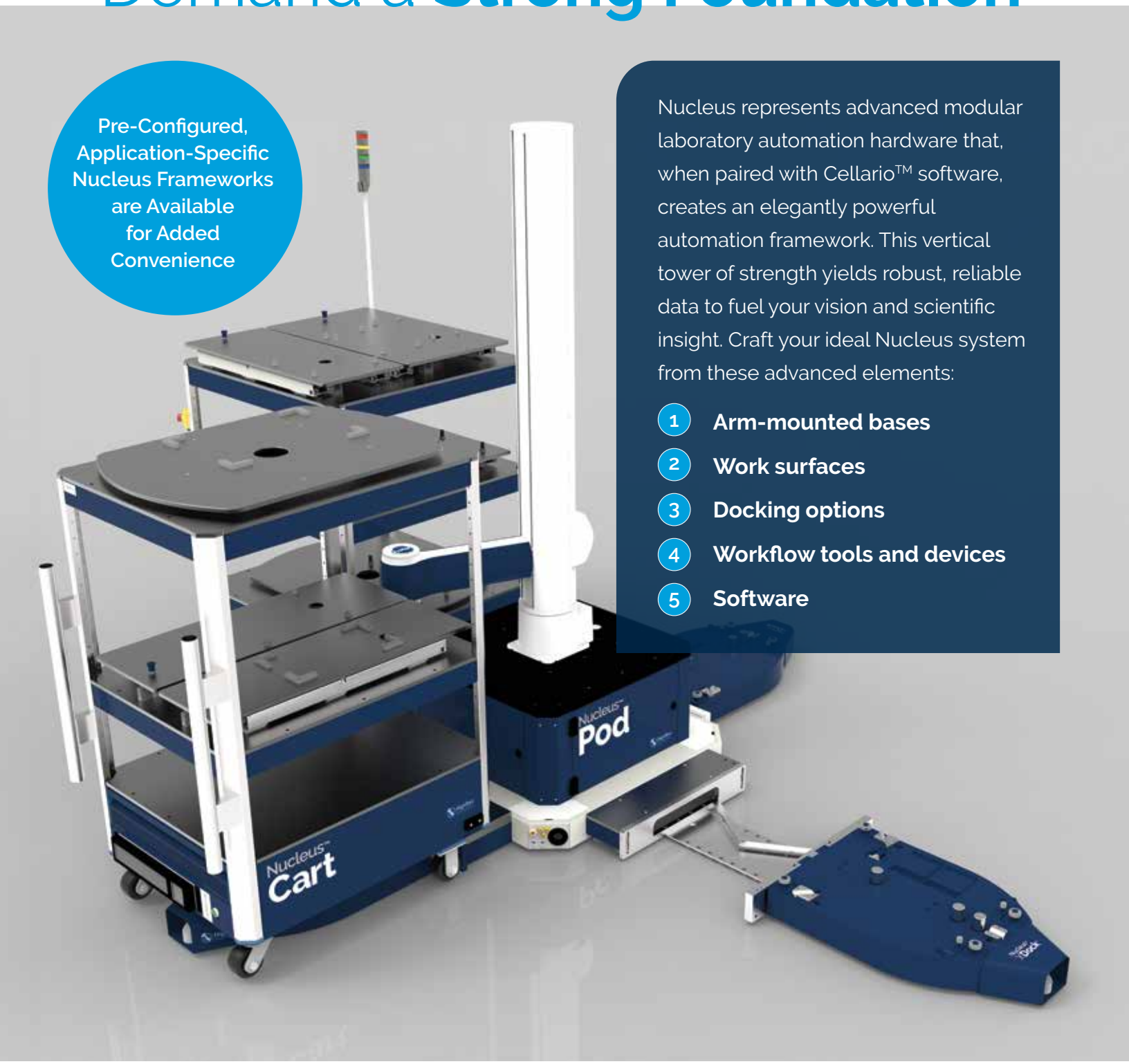
YOUR AREA OF INTEREST

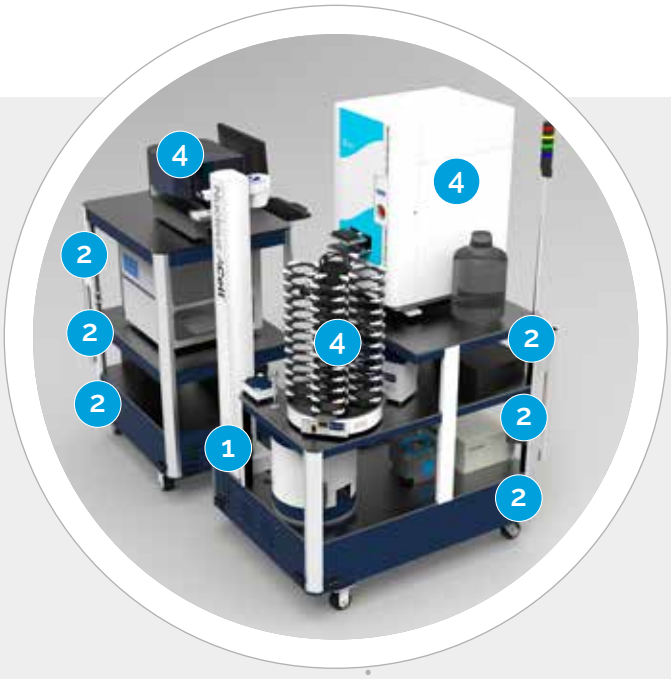
Stunning Insights Demand a **Strong Foundation**

Pre-Configured, Application-Specific Nucleus Frameworks are Available for Added Convenience

Nucleus represents advanced modular laboratory automation hardware that, when paired with Cellario™ software, creates an elegantly powerful automation framework. This vertical tower of strength yields robust, reliable data to fuel your vision and scientific insight. Craft your ideal Nucleus system from these advanced elements:

1. **Arm-mounted bases**
2. **Work surfaces**
3. **Docking options**
4. **Workflow tools and devices**
5. **Software**

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Embrace your **Base**

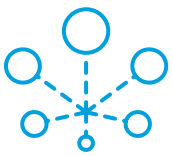
Your ideal Nucleus automation infrastructure starts with a collaborative robotic arm. Automation-enabling ACell™ robotic arms suit most purposes while the ZCell™ robotic arm is reserved for applications with high device density, wide service areas, and large payload capacities.

The arms move samples around your Work Cell swiftly and safely, even when operators are present, reducing manual variability.

Robotic arms are attached to mounts that are stunningly nimble, remarkably tenacious, or deftly agile.

ROBUST ARMS MOVE SAMPLES THROUGH THE WORKFLOW

APPLICATION AND LAB SPACE FLEXIBILITY



DEVICES UNIFIED FOR A COMMON GOAL

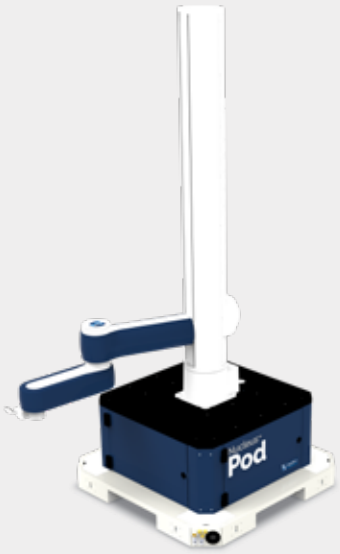
GET MORE DONE IN LESS TIME

NIMBLE

Mobile FlexCart with ACell robotic arm

TENACIOUS

Mobile FlexPod or Stationary Pod with ACell or ZCell robot arm



AGILE

Stationary Rail with ACell robotic arm

Contact sales@highresbio.com

or your local HighRes Biosolutions automation specialist for guidance creating your personalized Nucleus Work Cell.

*Flex*Cart™ Mount
Where and When You Need It

Mount an ACell collaborative robotic arm on a FlexCart for high device density in a small, ultra-mobile footprint.

This unprecedented mobility empowers labs to get more done with less lab space. On top of this, FlexCart breaks through laboratory space limitations so that you can achieve more with less space.

Using the FlexCart, you can vertically integrate several devices with the mounted collaborative robotic arm and wheel the resulting system to any location in your facility for use. Smooth glide wheels make it easy for users of any stature to move FlexCart, yet the cart is fully stable when mounted on a MicroDock or XDock docking station or locked into place prior to use.

For the utmost in nimble efficiency, FlexCart is easily and quickly docked to a larger Nucleus automation infrastructure or other FlexCarts and can also be operated as a standalone workstation.

Key Features

- Space-saving, high-density vertical device integration
- Quickly combine with large islands of automation and other FlexCarts or use as a standalone automated workstation
- Centralized power, data, and utility line connections
- Powered by Cellario whole lab automation software
- Endless device combinations
- Scalable to suit your evolving needs
- Easily share resources across labs

*Flex*Pod™ Mount

Your Go-To Workflow Assistant

Mount an ACell collaborative robotic arm on a FlexPod for mobile convenience that follows your lead.

The FlexPod offers rapid setup and teaching along with ambient microplate storage. Up to eight total (on-board and benchtop) devices may be integrated using the FlexPod.

It's easy to wheel this mobile companion to any combination of benchtop devices for automated processing. Smooth glide wheels make for easy transport around your facility, yet the FlexPod is fully stable when locked into place prior to use.

The FlexPod mounted collaborative arm is a tenacious workhorse, with an extensive robotic reach and Cellario whole lab automation software integration.

Key Features

- Saves valuable bench space
- Quick setup, teaching, and transport across your facility
- Centralized power, data, and utility line connections for on-board devices
- Powered by Cellario whole lab automation software
- Easily share resources across labs

Stationary Rail Mount
Brings It All Together

Mount an ACell robotic arm on a table using rails for amazing flexibility and expandability, even in complex, multi-step workflows.

Sturdy rail mounts extend the working envelope so that you can integrate additional devices at any time. This keeps your lab as agile as possible without sacrificing accessibility and ergonomics. As an extra benefit, each multi-tiered system can be scaled, and rails can be combined, at any time as your needs evolve.

Sensor-enabled slides and turntables on related work surfaces house any workflow device and allow for easy access while protecting users from harm. Teaching is a snap as you can guide the robot by hand into key positions using the floating robot teach mode.

Key Features

- 1.0, 1.5, and 2.0 meter rail lengths available
- Up to three tiers of work surface including under-tier consumable storage
- Scalable at any time
- Sensor-enabled slides and turntables
- Centralized device power, data, and utility line connections with access to waste chutes
- Quick setup with hand-guided and one-touch robot teaching
- Powered by Cellario whole lab automation software

Stationary Pod Mount
Central to Workflow Efficiency

Mount single or multiple ACell or ZCell collaborative robotic arms on a stationary Pod for centralized, compact operations.

The stationary pod integrates with an endless number of devices for walkaway processing tenacity. Devices connect to the stationary Pod via MicroDock or XDock docking stations. Many HighRes floor-mounted devices, such as the SteriStore, TundraStore, and AmbiStore, can directly integrate to the stationary Pod.

The stationary Pod offers an extensive robotic reach and full Cellario whole lab automation software integration.

Key Features

- Saves valuable bench space
- Devices integrate directly or through docking stations
- Quick setup and teaching
- Powered by Cellario whole lab automation software

Expand Your
Work Surface Horizon

Bring boundless application scenarios into reality by incorporating mobile carts and stationary tables into your unique Nucleus automation infrastructure. These work surfaces are placed in proximity to the Nucleus base and offer multiple configurations to securely house workflow devices from HighRes Biosolutions and third-party manufacturers.

In this worry-free framework, all power, data, and utility lines flow through the carts and tables.

ADAPTABLE TO CHANGING APPLICATIONS

SPACE SAVING

ENABLES INTEGRATED OR STANDALONE DEVICE USE

WORRY-FREE INFRASTRUCTURE

MOBILE

Mobile Nucleus carts settle perfectly onto docks in a Nucleus-based Work Cell for walkaway sample processing and may also be removed from the system so that the affixed workflow device may be used in a standalone application.

Two cart sizes are available; each equipped with up to three tiers of work surface along with your choice of slides, turntables, or slides with turntables to maximize workflow device accessibility and utility. Safety features and guarding options are also available.

MODULAR

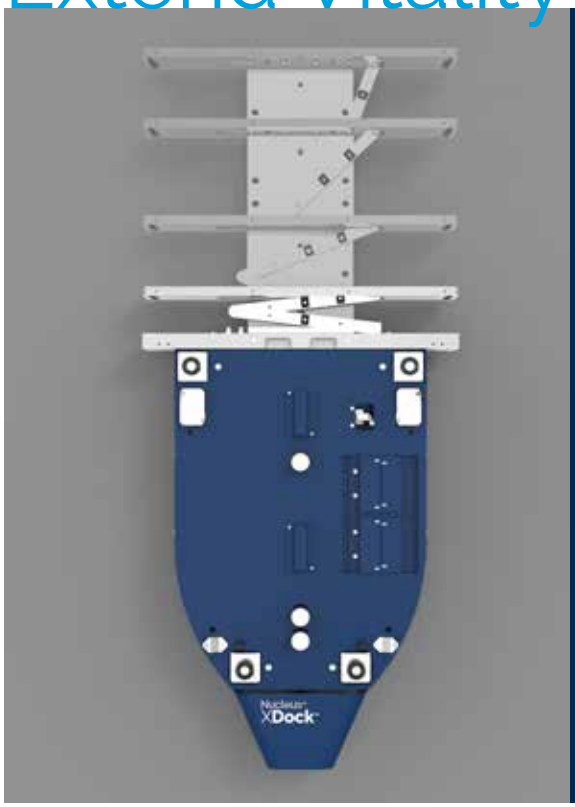
Stationary Nucleus tables provide unyielding stability in a hands-free Nucleus Work Cell while also enabling flexibility for manual workflow device operation. All tables are equipped with accessible power, data, and utilities along with access to waste chutes, if necessary.

Two table sizes are available; each equipped with up to three tiers of work surface along with your choice of slides, turntables, or slides with turntables to maximize workflow device accessibility and utility. Configurations offer an open base that is ideal for under-tier consumable storage or floor-mounted devices. Safety features and guarding options to protect one to four sides are also available.

Contact sales@highresbio.com

or your local HighRes Biosolutions automation specialist
for guidance creating your personalized Nucleus Work Cell.

Extend Vitality with a **Dock**



Embody the utmost in bespoke flexibility with a dock. In a Nucleus Work Cell with a stationary base, add one-of-a-kind optional docks to raise flexibility and modularity to stunning new dimensions.

Using docks, Nucleus carts affixed with workflow devices, or floor-based HighRes automated liquid handling and storage devices, are effortlessly integrated with the Nucleus base and automated workflow. Simply roll the cart on or off the dock, locking or unlocking the docked cart using a pneumatic foot pedal.

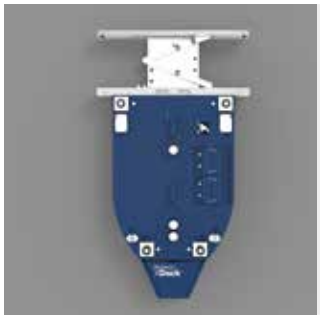
There's no need to reteach positions. No need to manually reconnect power, data, or utility lines. Laboratory life doesn't get much easier than this.

ORIGINAL

MicroDock™

Fixed length docking device

EXPANDED



XDock™

Variable length docking device, 11 positions in 50 mm increments

UN/DOCK IN MINUTES

STREAMLINED EFFICIENCIES

INTEGRATED OR STANDALONE DEVICE SUPPORT

SERVICE WITHOUT DISRUPTION

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Add Vital Workflow **Devices**

From NGS library prep to small molecular discovery and so much more, Nucleus Work Cells join together all the devices necessary to invigorate your application-specific workflows. Multiple Nucleus Work Cells can also be combined into larger systems to power an interconnected data factory.

Ready for change? So is Nucleus. At any time, devices are easily exchanged, and the scalable Nucleus Work Cell layout is quickly reconfigured, to propel your work in new directions.

A wide range of devices may be integrated to fully flesh out your automated workflow goals.

HighRes Biosolutions Devices

- Prime automated liquid handler
- SteriStore automated laboratory incubator
- TundraStore automated laboratory freezer
- AmbiStore random access sample storage carousel
- MicroServe high-density labware stacker carousel
- NanoServe labware stacker carousel
- MicroSpin automated centrifuge
- PicoServe benchtop labware handling
- PlateWeigh precision automated scale
- LidValet high-speed delidding hotel
- PlateOrient quick labware reorientation

Third-Party Devices

Options are almost endless; contact us with questions about specific products.

DENSIFY AND CENTRALIZE WORKFLOW TOOLS

FOCUS ON DATA-DRIVEN INSIGHTS

CHANGE ON-THE-FLY

DEVICE AGNOSTIC

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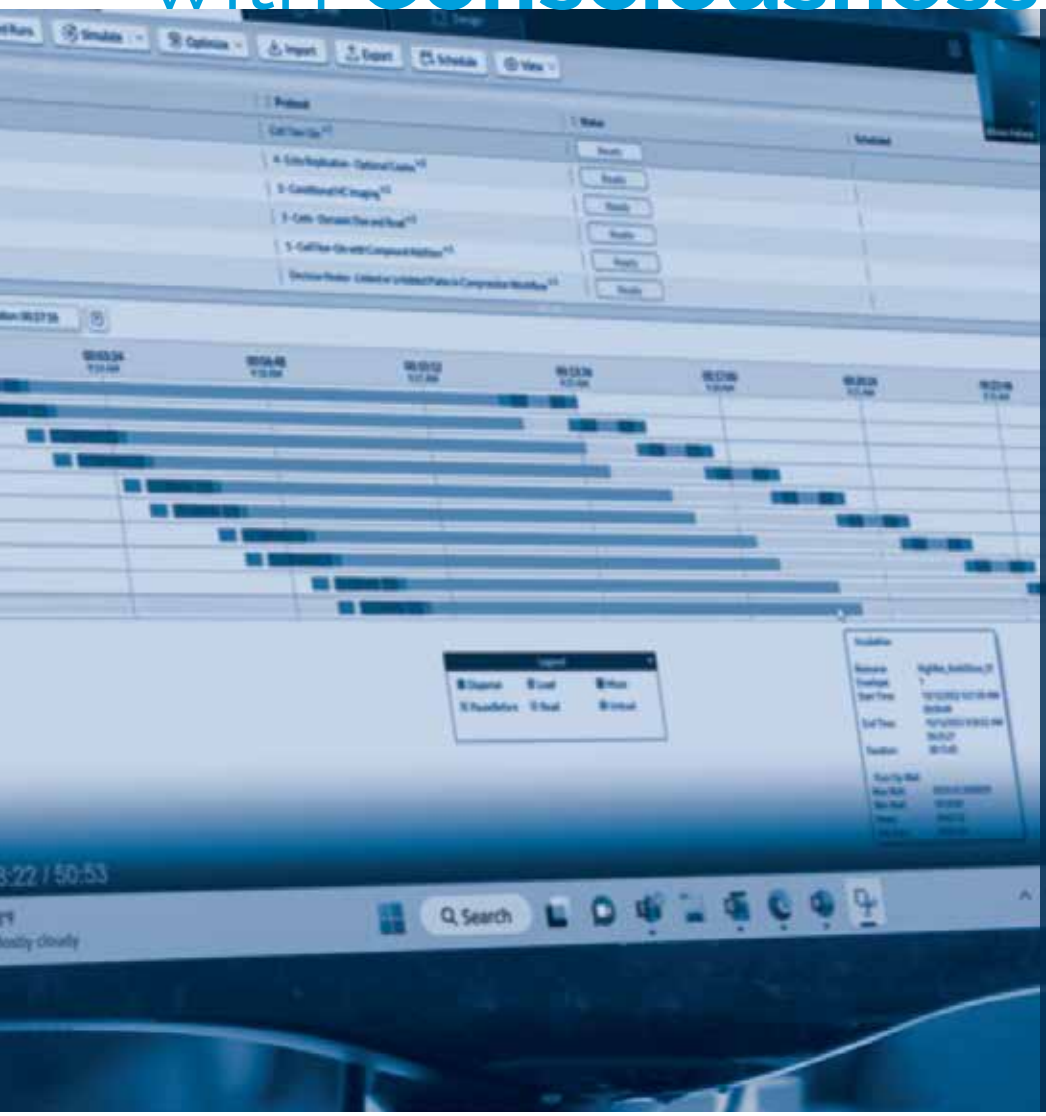
Infuse Your Creation with **Consciousness**



Cellario is the integration software framework behind each Nucleus Work Cell. In other words, the brain behind the brawn.

Cellario brilliantly organizes, schedules, and runs multi-device workflows regardless of device manufacturer or assay format, and seamlessly integrates with your preferred Laboratory Information Management System (LIMS) or other internal software.

Additionally, this robust and modular software intuitively communicates with any device driver software to detect, report, and react to system signals.

EXTRAORDINARY SOFTWARE MANAGEMENT

INTUITIVE

CENTRALIZE DEVICE COMMUNICATION

REAL-TIME VISUALIZATION

Our People **Help You Grow**

Peopleware everywhere

The all-encompassing Nucleus experience extends beyond hardware and software. HighRes specialists around the world provide services so splendid and detail-focused that they rival that of the concierge service in the finest establishments.

Peak Performance

Push past your competition! After the one-year warranty, continue to perform at the top of your game through results-driven service contracts.

One Call For All

With complete integration of HighRes devices to Cellario, you don't have to manage multiple contracts. Instead, one phone call to our support engineers is all you need.

Specifications and Configurations

Nucleus Base Specifications – FlexCart

	Two Tier Option	Three Tier Option
Length	142.2 cm	142.2 cm
Width	104.7 cm	104.7 cm
Height	154.8 cm	124.8 cm
Weight Capacity (per Shelf)	226 kg	226 kg
ACell Robotic Arm	Included	Included
Ergotron + Cellario PC	Included	Included
PlateOrient	Included	Included
Plate Hotel	Included	Included
Teaching Plate	Included	Included
MS-3 Barcode Scanner	Included	Included
Electrical Box	Comms/ADAM 16-port Ethernet Switch 30 A, 120 V UPS	Comms/ADAM 16-port Ethernet Switch 30 A, 120 V UPS
Overall Weight	322 kg	342 kg

Nucleus Base Specifications – Pod Mount

	Pod + ACell	Pod + ZCell
Length	102.5 cm	102.5 cm
Width	102.5 cm	102.5 cm
Height	189.9 cm	232.6 cm
Robotic Arm Reach	73.1 cm	179.3 cm
Z-Axis Travel	116.0 cm	142.0 cm
Positional Accuracy	+/- 0.02 cm	+/- 0.02 cm
Payload Capacity	0.50 kg	8.0 kg
PlateOrient	Included	Included
Plate Hotel	Included	Included
Teaching Plate	Included	Included
MS-3 Barcode Scanner	Included	Included
Power Requirement	208 VAC, 40 A, 60 Hz	208 VAC, 40 A, 60 Hz
Compressed Air Requirement	100-110 PSI, 10 SCFM, Oil-Free, less than 10% RH	100-110 PSI, 10 SCFM, Oil-Free, less than 10% RH
Electrical Box	2 x ADAM, 2 x MOXA 16-port Ethernet Switch 2 x RJ45 Ethernet Connectors 600 VA, 24 V, 5 A, UPS	2 x ADAM, 2 x MOXA 16-port Ethernet Switch 2 x RJ45 Ethernet Connectors 600 VA, 24 V, 5 A, UPS
Overall Weight	177 kg	213 kg

Contact sales@highresbio.com or your local HighRes Biosolutions automation specialist for guidance creating your personalized Nucleus Work Cell.

Nucleus Base Specifications – Rail-Mounted Table

Length	160 cm
Width	60 cm or 75 cm
Height	36.1 cm
Robotic Arm Reach	731.0 cm
Z-Axis Travel	116.0 cm
ACell Robotic Arm	Included
Safety System	Included

PlateOrient	Included
Plate Hotel	Included
Teaching Plate	Included
MS-3 Barcode Scanner	Included
Electrical Box	Comms/ADAM 16-port Ethernet Switch APC, 3000 VA, UPS
Overall Weight	150 kg

*Two single tables of a single width may be combined end-to-end to create a 320 cm rail.

Nucleus Base Specifications – Work Surfaces

	Cart	Table
Length (Standard)	-	100.0 cm
Length (Large)	100.3 or 110.4 cm	-
Length (Extra-Large)	133.6 or 142.1 cm	-
Width (Standard)	-	80.0 cm
Width (Large)	83.0 cm	100.0 cm
Width (Extra-Large)	104.6 cm	-
Height (Option 1)	42.5 cm	72.4 cm
Height (Option 2)	93.3 cm	102.9 cm
Height (Option 3)	144.1 cm	113.0 cm
Height (Option 4)	-	123.2 cm
Height (Option 5)	-	133.4 cm

	Cart	Table
Weight Capacity (per Shelf)	226 kg	226 kg
Power		110/230 V, 50/60 Hz
Electrical Box	Comms/ADAM 16-port Ethernet Switch 24 V, UPS	-
Overall Weight (Standard)	150-230 kg (Configuration dependent)	65 kg
Overall Weight (Large)	-	78 kg
Overall Weight (Extra-Large)	221-337 kg (Configuration dependent)	-

Nucleus Base Specifications – Docks

	MicroDock	XDock
Length (Fully Retracted)	99.2 cm	99.2 cm
Length (Fully Extended)	-	149.2 cm
Width	66.0 cm	66.0 cm
Height	14.6 cm	14.6 cm
Weight Capacity	818.2 kg	818.2 kg
Active Position Sensing	No	Yes
Supported Gases	Compressed Air, Nitrogen, Carbon Dioxide + Spare Line	Compressed Air, Nitrogen, Carbon Dioxide + Spare Line
Communications	Ethernet, DB-9 to Cat 6	Ethernet, DB-9 to Cat 6
Power	120/230 VAC, 25/15 A, 50/60 Hz	120/230 VAC, 25/15 A, 50/60 Hz
Overall Weight	67.1 kg	86.2 kg

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