

Enabling **cell therapy**  
**manufacture** at scale

TRUE FACTORY AUTOMATION





## The existing models cannot take us further

Cell therapy has come a long way. It is saving lives. But thousands of patients still go untreated. By 2030, that number could be over 500,000 every year.

To meet demand, we will need 10,000 to 50,000 doses per product, per year. That is not a step up. It is a complete shift in scale. And the current models have already hit the ceiling.

And then there's variability. It is already hard to manage. Scale production by 10 or 50, and variability scales with it. In an industry that depends on standardisation, that is not sustainable. It is unmanageable. And unacceptable.

What's the answer? More tools, more people, more cleanrooms? There isn't enough space. There aren't enough skilled people. And the cost of these treatments has to come down.



# Solving the manufacturing problem of scale

To scale further, we need a different model. One built for cell therapy.

Cellular Origins is the only factory-first approach to cell therapy manufacturing, guiding customers from planning to delivery on the route to scale. Developed alongside the world's largest cell therapy manufacturer, we're building Amazon-level industrialisation, not copy-paste cleanrooms. Software orchestrates every step, automation moves materials, and in-line verification keeps runs consistent.

Constellation® is the mobile robotic platform behind this factory-first approach. It is the most flexible path to commercial manufacturing, GMP-ready and built on modular automation that integrates proven third-party instruments without forcing change to your process, tools, or biology.

- We physically integrate instruments you trust with robots
- We connect them through one digital layer
- We turn them into a coordinated, scalable system
- We industrialise cell therapy manufacturing

No reinvention. No redevelopment. No new facility build. Just engineering that fits your biology, not the other way around.

## The same footprint.

## Very different outcomes

### Your options for scale

You've reached clinical success. Now the pressure shifts to scale. Everywhere you turn, you hear the same message: to scale, you need to automate. But what that actually means is far from clear. Automation comes in many forms, and the hardest question is how it behaves at scale. Many approaches promise growth. Few deliver it within the real constraints of space, flow, and capacity:

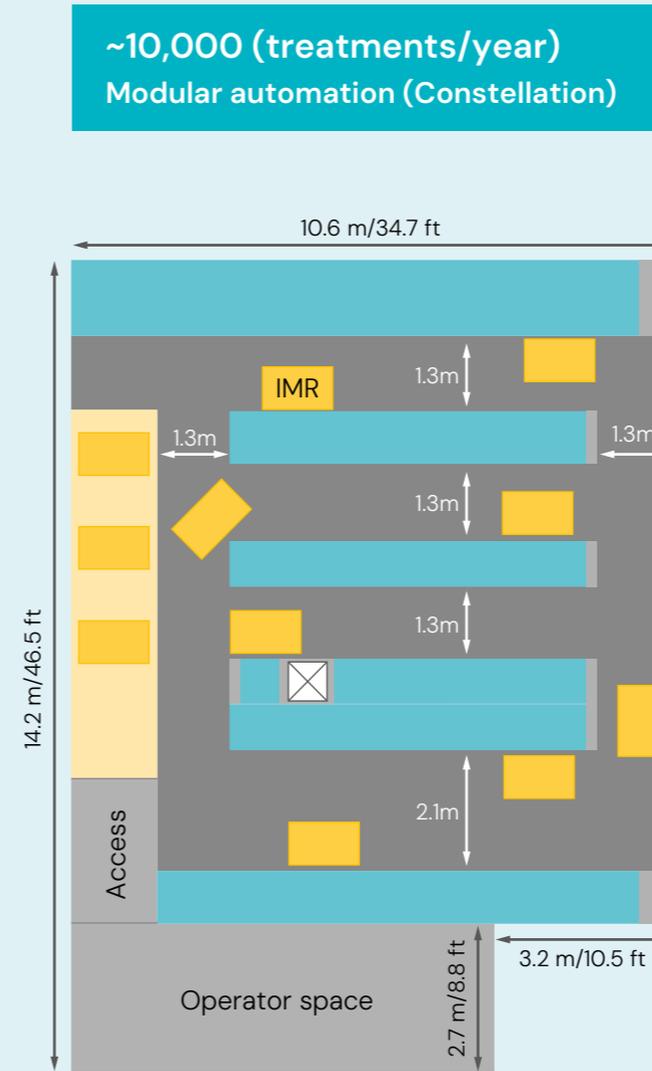
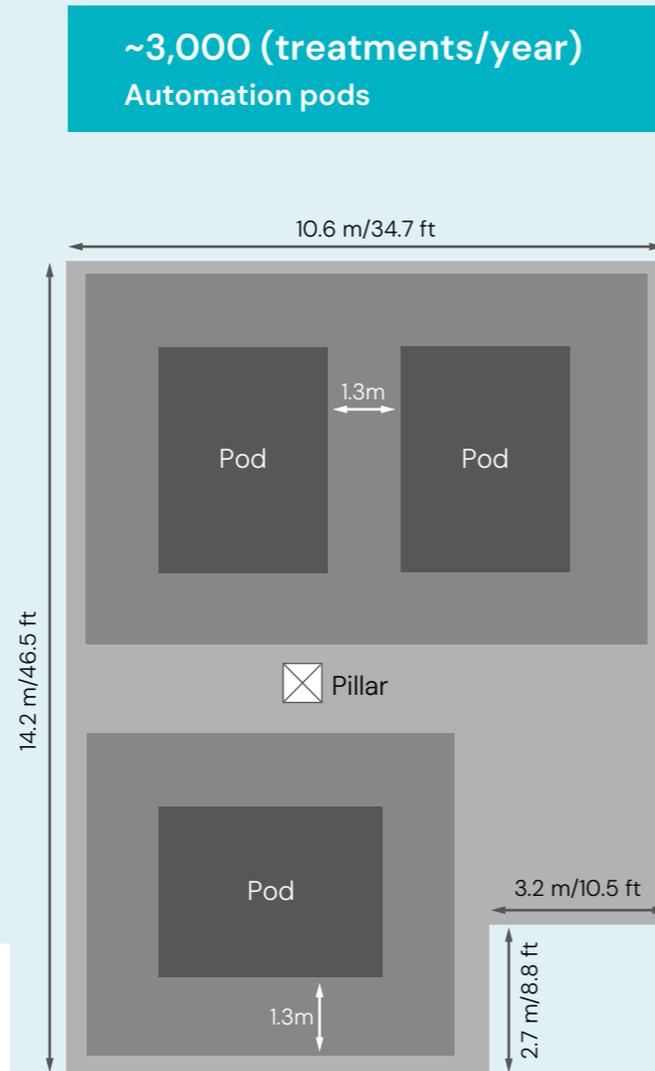
- Manual & semi-automated approaches hit a ceiling
- CDMO changes your biology
- Pod-based automation scales by duplication
- Modular automation scales by redesigning flow

### The automation choice that defines your future

If you need a bigger kitchen, you don't build another one exactly the same. You expand the one you have. You improve the flow and add capacity where it matters. Cell therapy manufacturing should scale the same way.

The diagram shows how pod-based automation and modular automation approaches compare in real cleanroom space.

Modular automation (Constellation) increases usable capacity within the same space



\*Integrated Mobile Robot (IMR)

**Pod-based automation** scales by duplication. When you need more capacity, you have to replicate the entire system, adding unnecessary infrastructure.

**Constellation scales like a factory.** **Modular automation** increases capacity without multiplying infrastructure, delivering higher throughput from the same cleanroom footprint while adding only what is needed.

True scale comes from redesigning flow, not duplicating infrastructure.

# Constellation: Built for your biology, designed for your future.

With a flexible, scalable approach, Cellular Origins has overcome the unique challenges of cell therapy manufacturing, unlocking access to the same advanced automation that has driven scale in logistics, automotive, and silicon fabrication industries.

**Constellation** combines mobile robotics and AI with proven bioprocess instruments. It delivers truly automated end-to-end manufacturing without changing your process, without redeveloping your therapy, and without slowing your path to commercialisation.

We automate what already works. We scale what you've already validated. More standardisation. More control.

## Constellation delivers four critical advantages:

**Scale:** Grow from clinical to commercial without revalidation or redesign.

**Flexibility:** Integrate the tools you trust. Update as you evolve.

**Low risk:** Protect your process. Invest when the time is right.

**Reliability:** Run with robotic precision, consistency, and confidence.



# What Constellation brings to you

## Scale without compromise



## Flexibility is non-negotiable



Constellation unlocks scale without forcing a reset. No fixed boxes. No reinvention. No process redesign. Just intelligent orchestration of what already works, with future-ready automation that grows at your pace.

**Modular, factory-scale automation:** expand capacity without duplicating systems or infrastructure

**Seamless scale-up** from clinical to commercial

**Predict space, staffing, throughput, cost per dose**

**16x less labour with 24/7** lights-out operation

**30x space optimisation** to unlock your cleanroom capacity

**Up to 51% lower COGs** through standardisation

**Scale on your terms:** deploy early or late

**FDA, EMA, MHRA aligned** for GMP, minimising comparability studies

In cell therapy, no two processes are the same. Cells behave differently. That's why flexibility isn't a luxury. It's a necessity. Constellation is engineered around your proven biology and validated process, so you can increase capacity without forcing change. You scale production by adding what you need, when you need it, while keeping the workflow you already trust.

**Built around your existing process, facility and instruments**

**Increase capacity within the facility you already have**

**Modular and future-ready:** reconfigure and expand as you evolve

**Change instruments or add new tech;** your automation still fits

**Mobile robotics enable flexibility,** compact layouts and continuous operation

**Scale at your pace:** upgrade what you need, when you need it

## Low risk route to scale



Scaling should not mean starting over. It should not mean locking into a system too early, changing what already works, or increasing regulatory exposure as you grow. Constellation de-risks your route to scale by protecting your biology, preserving your validated workflow, and keeping your path to commercial clear and compliant.

**Start small. Scale smart:** expand capacity as demand grows

**Delay investment:** automate when the therapy is proven in clinic and commercialisation begins

**Your process. Your product:** biology untouched, workflow preserved

**Built for GMP:** continuous digital batch records and audit-ready operations

**Total chain of identity:** full traceability from input to final therapy

**Sterile welding:** closed, contamination-free operation, Grade C/D compatible

## Reliability you can build on



With the complexity of cell therapy manufacturing, reliability is everything. A missed step or moment of downtime doesn't just disrupt operations, it puts a batch at risk, and potentially a missed therapy for a patient. Automation pods can fail as a single unit. Constellation's modular automation is built for continuity, keeping manufacturing moving when it matters most.

**Robotic standardisation** executes operations the same way, every time

**24/7 lights-out manufacturing,** minimal intervention

**Redundancy by design** reduces downtime and batch exposure

**Maintenance without stopping:** repairs and changeovers while production continues

**Safe human oversight:** Constellation works safely alongside your team, without disruption

**One unified digital layer** connects all tools, workflows and data

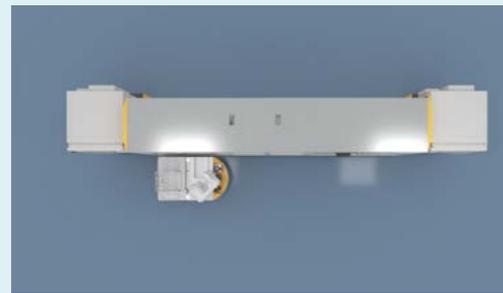
**Full digital batch records** enabling end-to-end traceability and GMP compliance

# From clinical proof to commercial scale: We'll take you there

Cellular Origins is the authority on the route to scale cell therapy manufacturing, guiding our customers from planning to delivery. Whether you're designing for one hundred treatments a year or hundreds of thousands, we help you

navigate the complexity, validate the numbers, and build the right facility plan from day one. No overbuying. No oversized cleanrooms. Just a route to scale that is engineered, realistic, and deliverable.

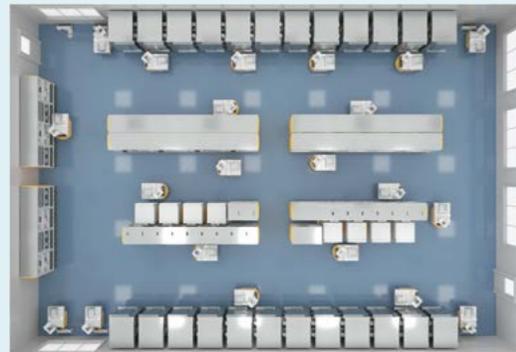
## Example facility layouts:



500 treatments per year



1000 treatments per year



10,000 treatments per year

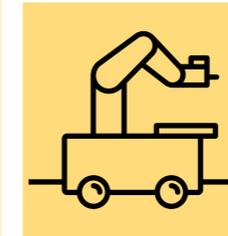


50,000 treatments per year

# Spotlight on tech

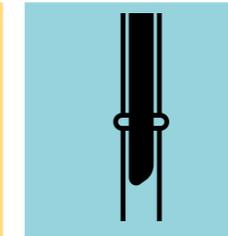
## Mobile robots

Constellation uses Integrated Mobile Robots to move materials between workstations and unit operations dynamically. Mobile robots aren't tied to fixed tracks or pods, so flex to your layout and scale without significant structural change. If one robot is unavailable, tasks reassign automatically and production continues, keeping batches moving. Proven fleet robotics, built for GMP cell therapy manufacturing.



## Verified closed, sterile connections

Every connection is a potential route for bacterial ingress. Constellation uses trusted sterile tube welding to create closed fluid pathways between unit operations, eliminating open manipulations and operator variability. Every weld is subjected to 100% post-weld integrity QC before the process proceeds, supporting demonstrably closed operation, ensuring consistent connections, reducing contamination risk, and enabling Grade C/D environments.



## One digital layer connecting every step, every tool, every datapoint

Constellation unifies operations through a single digital layer built on an ISA-88-aligned architecture, coordinating robot movement, workflows, and third-party tools across unit procedures and phases. Events and timestamps are captured automatically to support electronic batch records and end-to-end traceability. The result is consistent execution, transparent data, and scalable GMP alignment.



## Proven third-party tools, preserving comparability

Constellation integrates proven, regulator-familiar third-party tools, instead of replacing them. The cell journey, critical quality attributes, and support



comparability are preserved as you scale. And as needs evolve, Constellation's modularity makes change simple. Add, upgrade, or swap best-in-class tools without redesigning the whole facility. This enables continuous improvement and scalable expansion with lower technical and regulatory risk.

Constellation works with your proven technologies, not in place of them. This isn't a black box. It's a co-developed, fully integrated system designed around the therapy you already know works.



## A solution built around you

**Every therapy is different. That's why we don't offer a one-size-fits-all manufacturing solution.** Instead, we design flexible, automated systems around your process, enabling scale without forcing change. We build a scale-up plan around your process, your platform, your facility and your goals. Need to reach 50,000 doses a year or more? We'll define and deliver the route to get you there, with your biology intact.

You bring the therapy. We build the scale. We work side-by-side with you to:

- Translate your semi-automated processes into fully automated workflows
- Design efficient, future-proof manufacturing facilities
- Support seamless integration of your existing technologies
- Facilitate your manufacturing phase up to your timelines

And it doesn't take much to get started. To design a system around your needs, we only need:

- Your target throughput
- Your unit operations
- Your culture/expansion times
- Your layout or footprint (if you're working within an existing facility)

# Why leading therapy developers choose us

## Built on foundations that scale

Big pharma and biotechs do not bet on hope. They bet on strong foundations, expertise, reliability, and delivery. At Cellular Origins, we are built to scale with our partners. Our world-class team brings deep experience across cell and gene therapy, robotics, automation, and engineering, backed by decades of delivery excellence from our heritage at TTP. Progress speaks for itself, with our first Constellation system delivered in early 2025 and our first GMP installation scheduled for 2026.

## Partnership in action

In cell therapy manufacturing, proof and provenance matter. Delivering full automation for late-stage and approved therapies demands minimal process change and the lowest possible risk. The only way to succeed is through close partnership with the technology suppliers at the heart of our field. Our relationships are not loose alliances, but close, formal agreements that include:

- Co-development
- Co-supply
- Co-marketing

Hardware is supplied through Cellular Origins and consumables directly from the manufacturer, with no complications to quality, liability or supply chain. Our partners agree: together we open the road to cell therapies entering mainstream medicine.

## Delivery you can rely on

Reliability comes from how systems are designed and how they are supported. We provide coordinated service and support for all hardware and software through a single point of contact at Cellular Origins. Constellation is engineered with redundancy, production security, and continuity at its core. No pod shutdowns. No emergency process transfers. Just seamless re-tasking through mobile robotics to keep manufacturing running.

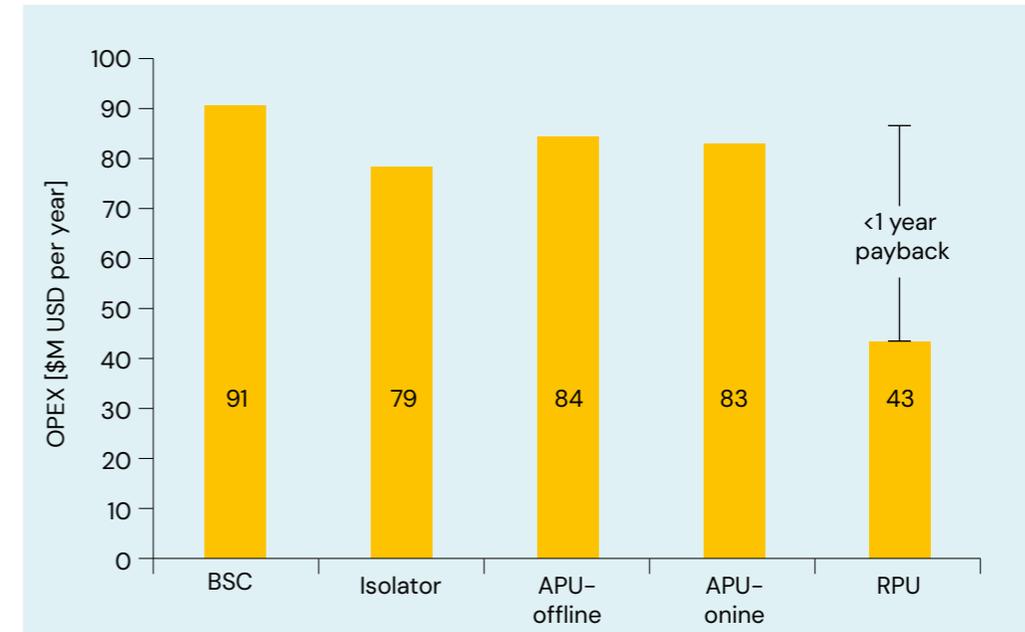
What we build with our partners goes far beyond manufacturing. It brings life-changing treatments to more patients.



# Payback in eleven months

Manufacturing at scale has to make financial sense. Independent modelling by PM Group shows Constellation can deliver a return on investment in under 12 months, with payback in around 11 months, driven by lower operating

costs, drastically reduced labour and a more efficient facility footprint. It's a capital investment that pays for itself quickly, while building long-term capacity for commercial production.



PM Group, 2025 (presented at Interphex 2025).

# About us

Cellular Origins is a team of cell and gene therapy experts, engineers, and automation specialists working to solve one of the biggest bottlenecks in advanced therapies: manufacturing at scale. We build practical, real-world solutions that make production reliable, predictable, and ready for commercial

demand. Through deep industry collaboration and strong partnerships, we are industrialising cell therapy manufacturing for the therapies that will define the next decade. Our purpose is simple: to help life-changing treatments reach more patients by making scale achievable.



# Let's build your path to scale

Success in cell therapy will belong to those who scale with confidence. Constellation will deliver industrial manufacturing for the therapies that are shaping this decade and the next.

If you're ready to discuss commercial manufacturing, we're ready to build it with you. Your process stays yours. Your biology stays untouched. Your path to scale becomes clear.

## What your journey can look like:



**Start the journey with us today:**

**Email us at:** [hello@cellularorigins.com](mailto:hello@cellularorigins.com)  
or scan the QR code





Scan to contact us



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