PLANT TECHNOLOGY

Somatic embryogenesis automation

AI-powered automation
for precision plant propagation

From cell to plant:
A seamless, scalable, and sterile workflow

- **Food security**
  Such as banana, cassava, oil palm, potato, and berries (e.g. strawberry, blueberry, raspberry)
- **Biotech crops**
  Including gene-edited or genetically modified lines requiring high-fidelity propagation
- **Ornamentals**
  Like orchids, anthuriums, and other high-value floriculture species

PLANT TECHNOLOGY

Somatic embryogenesis

Somatic embryogenesis is a tissue culture technique that regenerates whole plants from somatic cells. It is especially valuable for crops that are difficult to propagate through conventional methods and ensures genetic uniformity across large populations. This makes it particularly critical for food crops, where consistent, large-scale production is essential to meet global food demands. By enabling the rapid and uniform multiplication of elite lines, somatic embryogenesis supports food security and agricultural resilience. It is also highly applicable to biotech lines and high-value ornamentals, where precision and fidelity are equally important.

Viscon's Somatic Embryogenesis Platform automates this complex process from start to finish. Using AI, robotics, and phenotyping, the platform delivers a fully closed-loop workflow: from embryo selection to cultivation and transplanting. Each step is optimized for sterility, scalability, and traceability, enabling highthroughput micro-propagation with minimal manual handling. The result: vigorous, transplant-ready plants produced with unmatched precision and efficiency.

SOMATIC EMBRYOGENESIS

Automation that empowers your science

At Viscon, we believe technology should support your research. Not limit it. That's why we don't offer standard machines, but tailored solutions for your breeding and micropropagation protocols.

We combine software, hardware, and plant science in one integrated system. With years of hands-on experience in our own lab, we understand your crops and processes in detail. This makes us more than a supplier, we are your knowledge partner:

- **Align automation with your protocols, ensuring scientific integrity**
- **Balance standardization with flexibility, so your process stays yours**
- **Optimize throughput, consistency, and scalability through plant science expertise**

With Viscon, automation becomes an extension of your scientific process, ready to grow with your goals.

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The future of scalable plant propagation

SOMATIC EMBRYOGENESIS

Integrated platform to let plants thrive

Viscon's Somatic Embryogenesis platform combines advanced automation, intelligent data management, and precision engineering to create a seamless journey from cell to plant.

The process begins with a tray that is automatically filled with culture media. The system then selects the most viable embryos using AI-driven vision technology and places them precisely into the tray. Following propagation, the young plants are automatically transplanted for transfer to the nursery. Each step is modular, repeatable, and fully data-driven, ensuring complete traceability throughout the workflow.

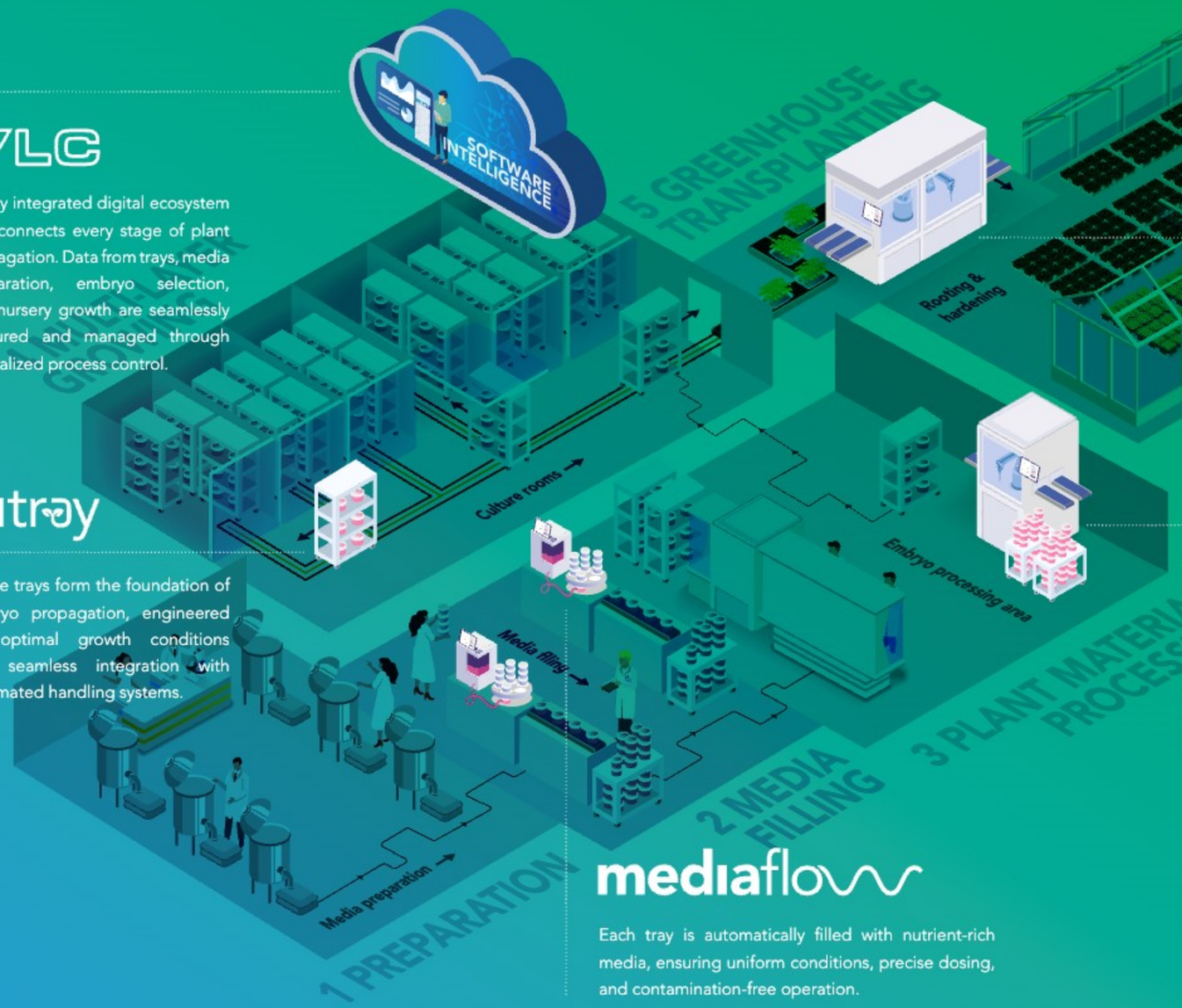
- **Modular and repeatable**
  Scalable for any production environment
- **Elite plants ready to grow.**
  Uniform, vigorous, and reliable
- **Efficiency and precision**
  Minimal manual handling

VLC

A fully integrated digital ecosystem that connects every stage of plant propagation. Data from trays, media preparation, embryo selection, and nursery growth are seamlessly captured and managed through centralized process control.

vitray

Sterile trays form the foundation of embryo propagation, engineered for optimal growth conditions and seamless integration with automated handling systems.



phytoflow

Transplanting is guided by genotype and phenotype data, ensuring only elite plants continue to the next phase. Unique barcodes enable complete tracking throughout the process.

vitroflow

AI-driven vision technology identifies and places the most viable embryos with pinpoint accuracy. Every action is digitally recorded to guarantee full traceability.

mediaflow

Each tray is automatically filled with nutrient-rich media, ensuring uniform conditions, precise dosing, and contamination-free operation.

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Ensuring precision, sterility, and scalability from the very first stage

Precision media dispensing
within a compact footprint

mediaflow

Dimensions	580 × 480 × 290 mm
Weight	20 kg
Power	240 W
Voltage	100–240V, 50–60Hz
Compliance	CE, UL/CSA
Sound level	≤ 80 dB(A)
Controls	24 V DC

- **Interchangeable tray holders**
- **Quick-swap filling head**
- **Integrated flush system**
- **Rear-mounted media and flush connections**
- **Compact and lab-ready design**
- **Safe operation with hazard zone markings**

SOMATIC EMBRYOGENESIS

Clean & consistent **media filling**

Viscon's Media Dispenser automates the precise filling of multiwell plates and cultivation trays with liquid, semi-solid, or gel-based media. Compact yet industrial-grade, it ensures consistent volumes and sterile operation, laying the foundation for uniform plant development.

Its modular design includes interchangeable tray holders and a quick-swap filling head, enabling seamless adaptation to various tray formats. An integrated flush system prevents blockages and simplifies cleaning between media types, while rear-mounted connections manage fluid flow for a smooth, hygienic cycle.

Built for both research labs and high throughput production environments, the system operates quietly within a wide voltage range and complies with CE and UL/CSA standards. Safety features include protected movement zones, clear hazard markings, and temperature warnings for hot liquids, maximizing uptime and minimizing manual handling.

SOMATIC EMBRYOGENESIS

Embryo **cultivation trays**

Viscon's specialized cultivation trays are engineered to meet the unique demands of somatic embryo development. Each tray features isolated cells that ensure optimal spacing, promoting uniform growth and reducing competition for nutrients.

The design supports controlled airflow and moisture retention, creating a stable microenvironment that enhances embryo viability and minimizes contamination risk. Made from durable, lab-grade materials, the trays are built for repeated use and consistent performance across propagation cycles.

Fully compatible with Viscon's Media Dispenser and robotic handling systems. Whether in R&D or scaled production, these trays integrate seamlessly into automated workflows. Their modular format allows easy transfer between sterile lab environments and downstream processes such as transplanting or phenotyping.

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Intelligent technology for embryo handling

ViTray VF

Material	Polypropylene, transparent
Dimensions	167.9 × 116.9 mm (tray & lid)
Height	Tray: 29 mm | Lid: 18 mm
Wall thickness	0.9 mm (tray) | 0.8 mm (lid)
Capacity	40 positions for embryos
Stackable	18.9 mm stacking height

- **Optimized for sterile, precise embryo development**
- **Automation-ready with media dispensers, embryo pickers & transplanters**
- **Supports individual cell growth**
- **Traceable and scalable for high-throughput**
- **Compatible with liquid, semi-solid, and gel media**

Designed for precision
built for integration

vitroy

SOMATIC EMBRYOGENESIS

AI-driven **embryo picking**

Viscon's VitroFlow automates one of the most delicate stages in plant propagation: identifying and transferring microscopic embryos. Using high-resolution imaging and machine learning, the system selects viable specimens based on morphology and places them with surgical precision via a robotic arm.

Each embryo is logged via barcode and stored in a central database for full traceability and integration with downstream phenotyping and breeding workflows. This AI-driven, data-centric approach ensures consistent quality, sterility, and scalability in early-stage plant development.

Technology	High-resolution imaging & machine learning
Sample size	≤ 3 mm (embryos, callus, seeds)
Throughput	250–300 specimens/hour
Features	Automatic lid handling, pipette tip sizing, sterile HEPA-filtered environment
Traceability	Barcode logging and database integration for phenotyping correlation

- **AI-powered embryo selection based on morphology**
- **Barcode-based traceability for data-driven propagation**
- **Seamless phenotyping integration**
- **Automatic lid handling (open/close)**
- **Auto-sized pipette tips for optimal specimen handling**
- **Live imaging and manual verification options**
- **Sterile, overpressured HEPA-filtered workspace**

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The future of plant propagation

Automated precision
from dish to decision point

vitroflow

Marker-guided
selection for elite plants

phytoflow

Speed	400–900 plants/hour (configurable)
Data input	Phenotypic (vision system) Genotypic (third-party API)
Traceability	Barcode labeling & dataset logging
Integration	Compatible with breeding software & automation systems
Use case	R&D and high-throughput breeding

- **Marker-assisted selection at scale**
- **Real-time phenotypic grading via vision system**
- **Genotype data integration via API**
- **Automated transplanting and rejection**
- **Barcode tracking and full traceability**
- **Seamless integration into automated workflows**

SOMATIC EMBRYOGENESIS

Marker-based **transplanting**

Viscon's PhytoFlow automates the final stage of plant propagation with precision and data-driven intelligence. Designed for breeding environments, it combines RGB imaging, 360° grading and genotype data.

Evaluatinge plants based on: phenotypic traits (height, stem thickness, leaf count, morphology) and genetic markers (resistance or transformation success). Each plant is graded in real time. Elite individuals are transplanted into new substrates, while non-performers are automatically sorted out.

The system connects to breeding software via API, enabling marker-assisted selection at scale and barcode-based traceability from embryo to transplant. Resulting in high throughput transplanting with precision, sterility, and complete data integration.

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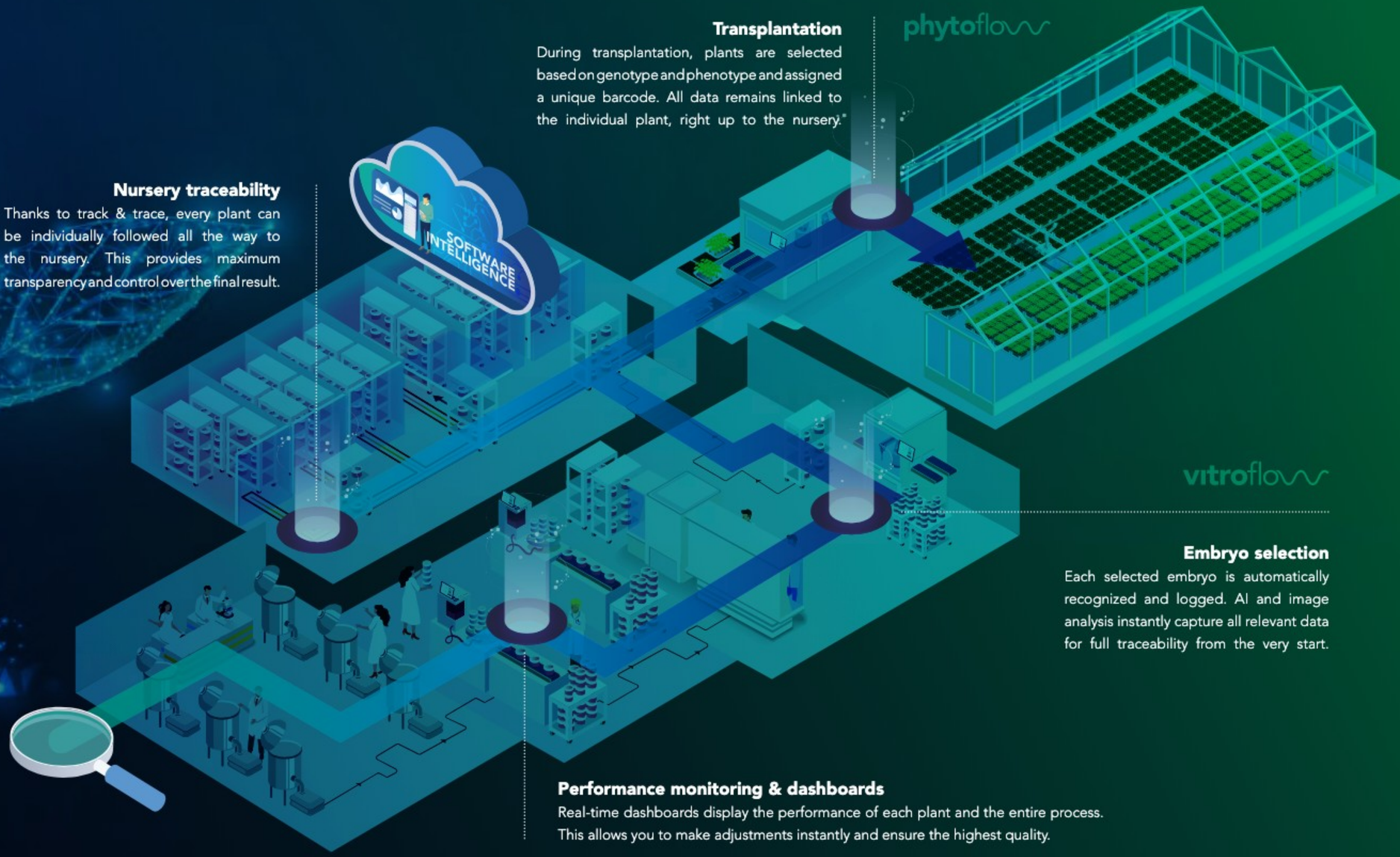
Automation that empowers your science

FROM EMBRYO TO NURSERY

Complete traceability and performance insights

Viscon's Somatic Embryogenesis platform is powered by data. Through intelligent data registration and analysis, it provides complete traceability from the initial embryo selection to the nursery stage. Every step of the process is supported by real-time data, giving full visibility and control over plant development and performance.

In practice, this begins with VitroFlow, where embryos are automatically chosen using AI and instantly registered digitally. All relevant details, such as morphology, selection criteria, and origin, form the foundation of the data stream. Young plants are transplanted based on phenotypic data, and incorporating genotypic data from other platforms, each assigned a unique barcode that connects every piece of information to the next stage. This integrated dataflow enables continuous tracking and real-time performance monitoring, ensuring full transparency, traceability, and compliance from embryo to nursery.



Transplantation

During transplantation, plants are selected based on genotype and phenotype and assigned a unique barcode. All data remains linked to the individual plant, right up to the nursery.

Nursery traceability

Thanks to track & trace, every plant can be individually followed all the way to the nursery. This provides maximum transparency and control over the final result.

Embryo selection

Each selected embryo is automatically recognized and logged. AI and image analysis instantly capture all relevant data for full traceability from the very start.

Performance monitoring & dashboards

Real-time dashboards display the performance of each plant and the entire process. This allows you to make adjustments instantly and ensure the highest quality.

SOMATIC EMBRYOGENESIS

Converting data into value

Our platform transforms complex transplanting processes into streamlined, data-driven decisions. It supports order management, barcode tracking for trays, and integrates top and side camera inputs for advanced plant analysis. Enabling full control for breeders:

- Configurable regions of interest
- Image dataset tools
- Precise robot calibration
- Complete A to Z track-and-tracing

From lab bench to greenhouse: turning your breeding data into real value.

VLC

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Intelligent technology for embryo handling

Excellence in sustainable plant production

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