



# K-Systems G210 InviCell

## Long-Term Incubator

ORIGIO • SAGE • Humagen • TPC • **K-Systems** • RI • Wallace • LifeGlobal • CooperGenomics

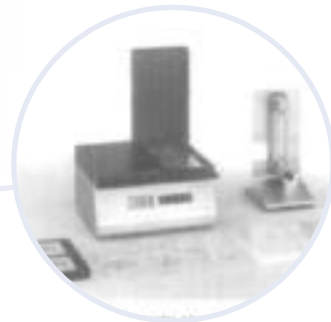
# K-Systems

The pioneer in IVF equipment solutions

## 1986: Henning Knudsen Engineering A/S is founded

The K-Systems story begins in Denmark with the founding of Henning Knudsen Engineering A/S. A talented engineer, Henning Knudsen designed and built the first IVF-specific workstation by installing a heated tabletop in a traditional Heto Holten laminar flow hood. That water-heated set-up became the world standard in IVF for many years to come.

Soon after, Knudsen turned his attention to incubators, introducing the first mobile incubator in 1992. In those days box incubators and the emerging benchtop incubators were humidified. However, Knudsen believed that with further development it would be possible to create an even better incubation environment, and reduce running costs.



## 1999: A new era for K-Systems product design begins

When Henning Knudsen retired in 1999 the company was sold and changed its name to Kivex Biotech Ltd., but kept the brand name K-Systems. This marked the beginning of a new era, in which Knudsen's ideology lived on but was wrapped in the sleek, minimalist designs of the British-born David Lewis, an eminent product designer most famously known for his work at Danish audio and video brand Bang & Olufsen. Using Lewis' designs, K-Systems continued producing incubators and started to manufacture its own workstations, including the well-known L100 series.



## 2008: The G185 is launched

In 2008, the company launched the first ambient air incubator based on mixing pure CO<sub>2</sub> and N<sub>2</sub> – the G185. By recirculating the dry gas mix inside each of the 10 separate chambers rather than purging expensive humidified premixed gas into the chamber after every lid opening, the G185 created a clean environment with the added benefit of lower running costs. The design also incorporated an innovative equilibrium chamber for media and dishes.

The success of the design speaks for itself. There are more than 1,000 units in operation worldwide and the latest model, the G185 v2.2 is still in production. Its principles have since been incorporated into benchtop incubators produced by several other manufacturers.



G185

## 2014: The G210 is launched

While the G185 remains popular, in 2014 K-Systems launched an even more sophisticated benchtop incubator – the G210 InviCell. Building on experience from clinics around the world, and again designed by David Lewis, this incubator aims to provide embryos with an environment as close as possible to *in vivo* conditions, while providing the ultimate user experience.



G210

## 2016: K-Systems becomes part of the CooperSurgical family

In 2016 the K-Systems brand was acquired by CooperSurgical. Building on the high-quality reputation of our legacy companies, including K-Systems Kivex Biotec Ltd., we provide a trusted system of consumables, equipment, technologies and genetic testing for the complete ART process.

# G210 InviCell long-term incubator

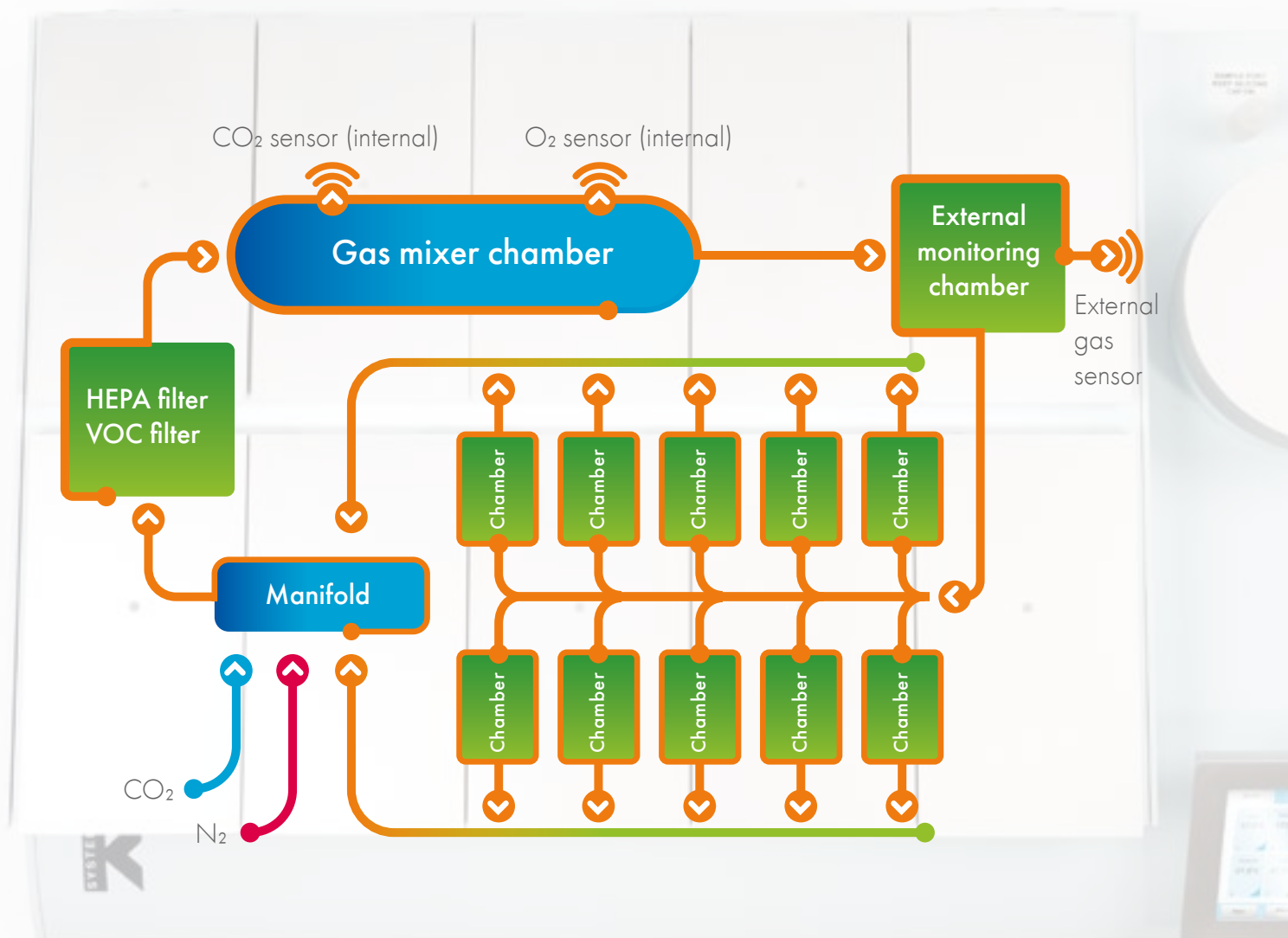
Creating an optimal environment for human embryos

**Designed to create an environment as close as possible to *in vivo* conditions:**

- 6-sided chamber heating provides optimal temperature conditions at all times
- BBT (basal body temperatures) function emulates the slight fluctuation of basal body temperature throughout the day
- Non-inductive heating system means no electromagnetic fields around the embryos
- Insulated chambers and 11 temperature sensors for quick and precise temperature control

**Uses sophisticated algorithms to tightly control gas concentrations and ensure stable conditions:**

- Advanced gas mixing technology allows gas concentrations to be set at exactly the required level for your culture system
- Gas is recirculated from the chamber through our own VOC and HEPA filter technology, before entering the mixing chamber





## Helps to minimize embryo stress from environmental changes, including pH:

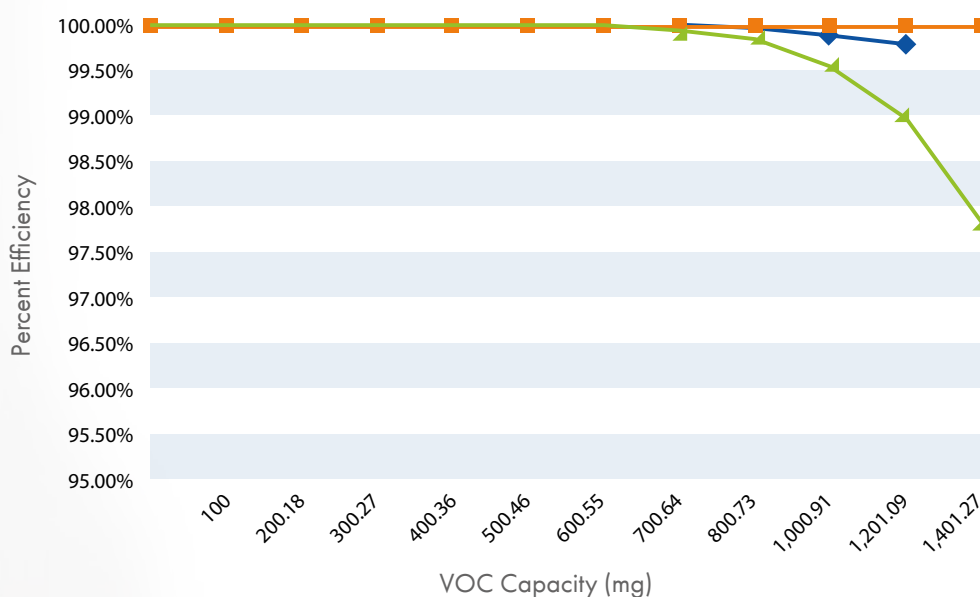
- Limiting embryo stress is a key factor in long-term incubation
- Our gas inlet and outlet nozzles are designed to ensure correct gas flow through the chamber
- Working with an oil overlay will delay gas diffusion, stabilize pH levels and osmolality of the medium during culture and provide a protective layer above the medium against airborne particles and other pathogens
- Ambient air incubation significantly reduces the risk of fungal growth and cross contamination.

## Uses ORIGIO and LifeGlobal filter technology to ensure excellent air quality in the chambers:

- Documented efficiency
- Both ORIGIO and LifeGlobal are at the forefront of removing VOCs in IVF clinics and have been for many years
- FDA cleared filters



Results from testing three different ORIGIO® Gas Line filters



# G210 InviCell long-term incubator

the ideal solution for the busy clinic

## Cost effective

- Low acquisition cost per patient
- Lower power consumption (270W) than even smaller incubators – the environmentally friendly choice!
- Low gas consumption as a result of our advanced gas control algorithms and recirculated gas flow
- Low maintenance costs

## Large capacity on limited footprint

- Space for 10 patients and for one equilibration chamber
- Optional Stacking System holds three units – equal to 30 patients or 1,500 cycles per year

## Extensive monitoring options

- On-screen monitoring and logging
- K-Link™ data logging system for easy documentation
- Independent built-in sensors for external monitoring of individual chamber temperature
- Connectivity for external monitoring of CO<sub>2</sub>
- Connectivity for alarm output to clinic
- Connectivity for SignipHy™ pH monitoring system

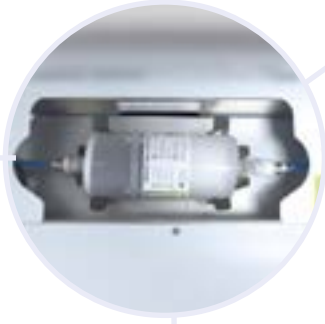
## Intuitive and minimalist Danish design

- Attractive and ergonomic
- One-step lids are easy to open and close during operation
- Smooth lines and soft corners are easy to clean
- Dish inserts are easily removed and autoclaved
- Built-in temperature and equilibration chamber for media and dishes



## Easy to maintain and service

- Easy to replace filters – can be changed by the operator
- On-screen information on service requirements



## Advanced user controls with built-in 7" touch-screen display

- Easy to use – even with gloves on
- Built-in security with multi-level password protection
- Graphic color display
- Use the display to:
  - Easily calibrate the incubator
  - Directly enter patient data
  - See a quick overview of each chamber and its key parameters
  - Control sophisticated functions, including the basal body temperature (BBT) function





## Dishes

LifeGlobal dishes are specifically designed for IVF, with quick embryo location and thinner bases for enhanced optics and visibility and more uniform temperature control. The minimal stacking ring provides optimal storage efficiency and limits the scratching potential of the surface it rests on, while the specially designed raised lid prevents oil sealing and promotes improved CO<sub>2</sub> exchange for more rapid and constant equilibration.

## Dish inserts

Our dish inserts allow the G210 to be customized for compatibility with a range of popular dishes, including LifeGlobal. The dish-specific grooves in the heating plates ensure direct heat transfer to the media in the dish, preventing the risk of cold spots.





# K-Link™ datalogging software

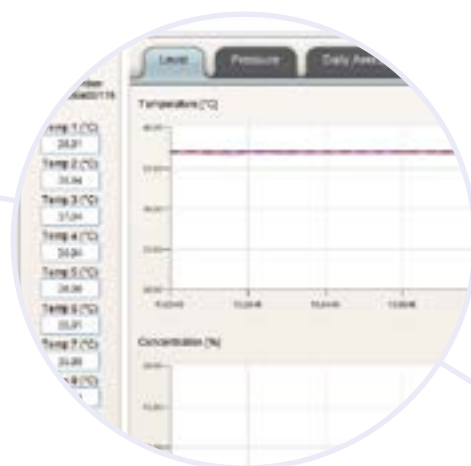
## Making documentation easier

K-Link software can be used to communicate with a G210 over a TCP/IP network to retrieve, display and save a log of measurements, warnings and daily averages into a spreadsheet. K-Link can also be configured to send email notifications, when alarms are triggered.

The K-Link software is easy to start and run on a PC.

### Measurement section

The measurement section displays the measurements retrieved from the device every 30 seconds, the connection status of the device, a setting to enable or disable email notifications if an alarm is triggered, and an 'Open Log' button to explore the folder containing the file where the logs are being saved.



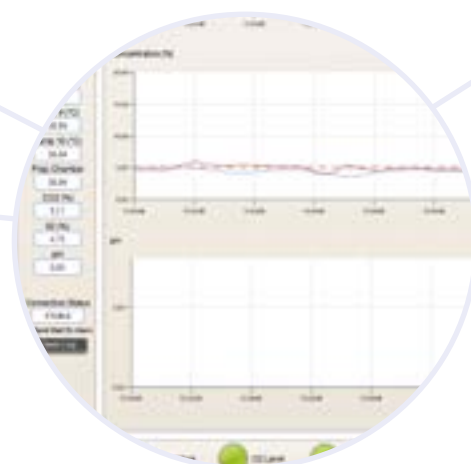
### Alarm display section

The alarm section displays the status of the alarms. When an alarm is activated on the device, the associated alarm in K-Link will change color to red. When the alarm is no longer activated on the device, the associated alarm in K-Link will change color back to green. K-Link refreshes the alarms every 5 seconds.



### Graph section

The K-Link software provides a number of graphs illustrating temperature, or gas levels mapped over time.





## Warning tab

This displays information about the last 50 individual alarms.

| Time                | Location | Status |
|---------------------|----------|--------|
| 2018-05-27 11:28:24 | 001      | OK     |
| 2018-05-27 11:28:13 | 002      | OK     |
| 2018-05-27 11:28:08 | 003      | OK     |
| 2018-05-27 11:28:07 | 004      | OK     |
| 2018-05-27 11:27:53 | 005      | OK     |
| 2018-05-27 11:27:51 | 006      | OK     |
| 2018-05-27 11:27:45 | 007      | OK     |
| 2018-05-27 11:27:40 | 008      | OK     |
| 2018-05-27 11:27:37 | 009      | OK     |
| 2018-05-27 11:18:55 | 010      | OK     |
| 2018-05-27 11:28:57 | 011      | OK     |
| 2018-05-27 11:27:55 | 012      | OK     |
| 2018-05-27 11:27:51 | 013      | OK     |
| 2018-05-27 11:27:41 | 014      | OK     |
| 2018-05-27 11:27:37 | 015      | OK     |
| 2018-05-27 11:27:34 | 016      | OK     |
| 2018-05-27 11:27:31 | 017      | OK     |
| 2018-05-27 11:27:28 | 018      | OK     |
| 2018-05-27 11:27:25 | 019      | OK     |
| 2018-05-27 11:27:22 | 020      | OK     |
| 2018-05-27 11:27:19 | 021      | OK     |
| 2018-05-27 11:27:16 | 022      | OK     |
| 2018-05-27 11:27:13 | 023      | OK     |
| 2018-05-27 11:27:10 | 024      | OK     |
| 2018-05-27 11:27:07 | 025      | OK     |
| 2018-05-27 11:27:04 | 026      | OK     |
| 2018-05-27 11:27:01 | 027      | OK     |
| 2018-05-27 11:26:58 | 028      | OK     |
| 2018-05-27 11:26:55 | 029      | OK     |
| 2018-05-27 11:26:52 | 030      | OK     |
| 2018-05-27 11:26:49 | 031      | OK     |
| 2018-05-27 11:26:46 | 032      | OK     |
| 2018-05-27 11:26:43 | 033      | OK     |
| 2018-05-27 11:26:40 | 034      | OK     |
| 2018-05-27 11:26:37 | 035      | OK     |
| 2018-05-27 11:26:34 | 036      | OK     |
| 2018-05-27 11:26:31 | 037      | OK     |
| 2018-05-27 11:26:28 | 038      | OK     |
| 2018-05-27 11:26:25 | 039      | OK     |
| 2018-05-27 11:26:22 | 040      | OK     |

## Service tab

The service tab presents software versioning information, device connectivity and serial number information. It also shows countdowns to indicate when a general service check, or a filter change should be conducted. When the countdown times out, the service alarm light is triggered and will remain active until all countdowns are reset. K-Link refreshes information displayed in the service tab every 10 minutes.

| Item                     | Value                       |
|--------------------------|-----------------------------|
| Customer Board Version   | 1.0                         |
| Power Board Version      | 1.0                         |
| Software Version         | 1.0                         |
| IP Address               | 192.168.0.10                |
| Port Number              | 8080                        |
| Serial Number            | 10000000000000000000        |
| Next Service In          | 240 hours Before 2018-11-07 |
| Next Filter Change In    | 240 hours Before            |
| Next Oil Light Change In | 240 hours Before            |

# SignipHy™ pH monitoring

An easy way to monitor pH trends during the week

**SignipHy offers fast, cost-efficient, and non-invasive continuous pH monitoring for the G210 InviCell Plus incubator. The technology is based on the principle that fluorescent dyes emit characteristic wavelength spectra at different pH levels.**

This technology, used in combination with disposable sensors accurately and reliably monitors the trend of pH in small volumes of cell culture media.

- FDA clearance pending
- Real-time pH monitoring (reading taken every 30 minutes)
- Accuracy (0.05 in a range of pH 7.0 to 7.6)
- Single use sensor probe suitable for up to 7 days of pH readings
- Easy to install and easy to use
- No user calibration required, and easy to align (no buffers, no hassles)
- One alignment probe can be used for all readers in lab

## SignipHy TrakStation®

The G210 InviCell Plus is designed for connection with the SignipHy TrakStation, a touch screen display that logs pH data and provides user alarms.



## TrakPod®

The TrakPod is located inside the G210 incubator and is the proprietary optical pH measurement server.

## sv2 sensors

The sv2 sensor is a non-invasive disposable with an advanced fluorescent membrane that can be used to track pH data for up to 7 days.



## qc2 alignment tool

The qc2 tool adjusts the fluorescent signal and re-aligns the TrakStation in 30 seconds or less. Use of this tool on a weekly basis means no calibration, pH buffers, or downtime for the lab.

# Incubator accessories

A complete solution to fit your culture system

**CooperSurgical offers a wide range of accessories and supporting products designed to work in harmony with your culture protocol.**

Along with clinical support from our expert embryology team, we are able to offer a complete culture system, including equipment, consumables and scientific knowledge, to give your embryos the optimal start.

## LifeGlobal dishes

The CooperSurgical portfolio includes LifeGlobal culture dishes in two sizes: Ø60mm and Ø38mm.

Specifically developed for IVF they are CE marked and FDA cleared, as well as 1-cell MEA, endotoxin (LAL), and sterility tested. Made from a non-toxic medical grade, non-pyrogenic polystyrene material, they are supplied in breathable packaging to reduce off-gassing time and limit the introduction of VOCs to the lab.

## Dish inserts

The G210 and G185 require dish inserts for each chamber, which will ensure correct heat transfer to the media in the dish.\* We offer several different dish inserts for compatibility with your preferred brand.

\* A pH dish insert is required in the G210 InviCell Plus for the chamber containing the pH sensor.

## Stacking system

Our space saving Stacking System has capacity for three G210 or G185 incubators, equivalent to 30 patients or up to approximately 1,500 cycles per year.

The Stacking System provides:

- Sliding incubator shelves with soft close function
- Built-in power outlets
- Fan for heat removal
- Tray system for keeping tubes and cables organized during operation
- Lockable doors
- Space to house a PC running K-Link for all three incubators

## Calibration devices

Our temperature and gas calibration devices will help you keep your K-Systems incubator up and running, allowing you to make frequent QC checks in the clinic.



# CooperSurgical Medical Affairs

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## Our team

Our team of experienced embryologists can assist you with the establishment of clinics (turn-key projects), laboratory design, and clinic audits to optimize lab performance.

In addition, they give lectures, run seminars and workshops, and support the research and development of new products.

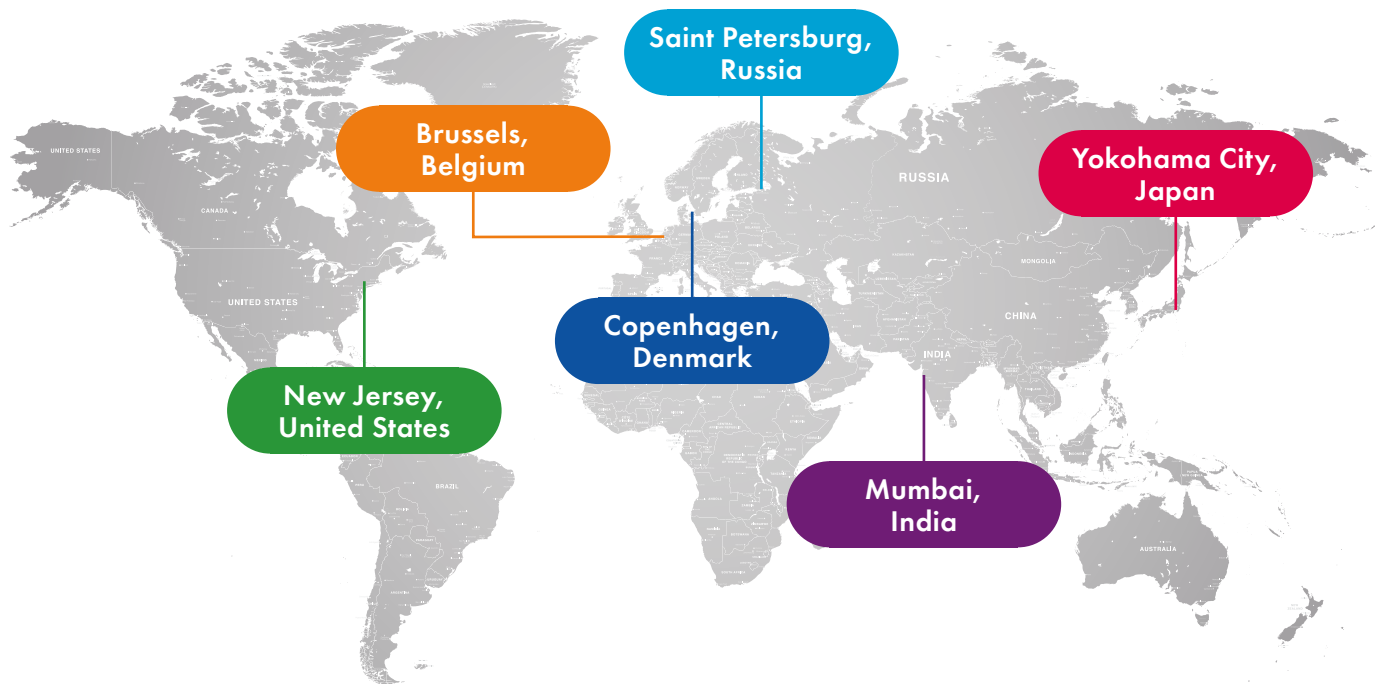
## Training program

CooperSurgical Fertility and Genomic Solutions provides global hands-on training courses for a comprehensive range of Genomic and Assisted Reproductive Technologies.

All of our training centers are fully equipped to support expert tuition, laboratory demonstrations, peer-to-peer discussions, and the sharing of best practice in a professional yet relaxed atmosphere. Our courses focus on providing evidence-based training by skilled, experienced embryologists in specific topics such as embryo culture, vitrification, sperm selection, biopsy and genetic testing.

If you or your staff could benefit from training, see our website [fertility.coopersurgical.com/training-lab](https://fertility.coopersurgical.com/training-lab) for more information, course schedule and bookings.

## Training course locations



## Workshops

As well as our training lab courses, we also run regular hands-on workshops around the globe.

To find out about events coming up in your region, contact your local CooperSurgical representative.



# Product order codes

## Long-term incubator

|                    |   | Order Code |
|--------------------|---|------------|
| G210 InviCell      | Incubator without external monitoring options | K59500     |
| G210 InviCell Plus | Incubator with external monitoring options    | K60000     |

## SignipHy pH monitoring

|                               |   | Order Code |
|-------------------------------|---|------------|
| SignipHy TrakStation          | Optical pH server built into G210               | SS-600018  |
| SignipHy TrakStation          | Tablet for pH monitoring for up to 3 incubators | SS-600019  |
| SignipHy qc2 alignment tool   | For weekly alignment – 1 year life              | SS-400020  |
| SignipHy sv2 sensor (10 pack) | Consumables – 1 week life                       | SS-400019  |

## Dish

|                |       |                                     |                                    | Order Code |
|----------------|-------|-------------------------------------|------------------------------------|------------|
| embryo corral® | Ø60mm | 2 larger inner corrals, 120 µL each | 8 outer wells, 50 µL each          | EMBC-010   |
| 4-well GPS®    | Ø60mm | 4 larger inner wells, 300 µL each   | 4 smaller outer wells, 100 µL each | 4GPS-010   |
| Universal GPS® | Ø60mm | 2 large wells, 150 µL each          | 8 outer wells 100 µL each          | UGPS-010   |
| embryo GPS®    | Ø60mm | 3 large center wells, 100 µL each   | 8 outer wells, 50 µL each          | EGPS-010   |
| µDrop GPS®     | Ø60mm | 12 precise 20 µL micro-wells        | Use up to 75% less oil             | MGPS-010   |
| Mini GPS® 38   | Ø38mm | 7 wells, 50 µL each, 5 mL overlay   | Parfocal with larger GPS® dishes   | MI38-010   |
| 38Special GPS® | Ø38mm | 12 GPS wells in 4 rows, 20 µL each  | 2 larger triangular washing wells  | SP38-010   |

## Dish inserts

|                            |               | Order Code |
|----------------------------|---------------|------------|
| LifeGlobal dish insert     | for G210/G185 | 23070      |
| Falcon dish inserts        | for G210/G185 | 23063-1    |
| Nunc dish inserts          | for G210/G185 | 23064-1    |
| Vitrolife dish inserts     | for G210/G185 | 23069      |
| LifeGlobal pH dish inserts | for G210/G185 | 23080      |
| Falcon pH dish inserts     | for G210/G185 | 23061-1    |
| Nunc pH dish inserts       | for G210/G185 | 23060-1    |
| Vitrolife pH dish inserts  | for G210/G185 | 23079      |

## Stacking System

|                      |  | Order Code  |
|----------------------|--|-------------|
| Stacking System 110V | Dimensions: 1100 x 830 x 1620 mm Weight: 100kg | 23050-110-O |
| Stacking System 220V | Dimensions: 1100 x 830 x 1620 mm Weight: 100kg | 23050-230-O |

## Thermometer

|                       |                                | Order Code |
|-----------------------|--------------------------------|------------|
| WIKA F100             | Including 1 probe, calibrated  | 11010P1    |
| WIKA F100             | Including 2 probes, calibrated | 11010P2    |
| Additional STS probes | not calibrated                 | 11006      |

## Gas Analyzer

|                                       |                     | Order Code |
|---------------------------------------|---------------------|------------|
| G-100 CO <sub>2</sub> /O <sub>2</sub> | Including hard case | G-100-10N  |



# A solution as unique as your business

At CooperSurgical, we partner with you  
to drive clinical efficiency

When you partner with CooperSurgical you become part of a truly global network of clinical experts ready to support you with highly specialized solutions, both for individual clinics and across large organizations. By providing you with optimal products, services, and training our aim is to offer you the best possible support to drive the efficiency of your clinic – and achieve the best results.

Day-to-day delivery may vary according to geographical location