The first automated culture plate reader

FDA CLEARED
The APAS Independence is an innovative in vitro diagnostic instrument for automated imaging, analysis and interpretation of agar culture plates. The world first instrument utilises the breakthrough Automated Plate Assessment System (APAS) imaging technology and artificial intelligence algorithms to analyse an image of agar plates, categorising them as ‘significant’, ‘non-significant’ or ‘negative’, and ‘for review’.
Embracing automation in microbiology

With an ageing population and many chronic diseases on the rise, microbiologists are under immense time pressure. Microbiology laboratories are increasingly expected to do more with less resources.

While advancements have been made in some areas of pathology, with diagnostic materials being screened using image analysis technologies, the reading and reporting of cultures from agar plates remains a manual process.

The APAS Independence is task focused, compact and designed specifically to overcome the bottleneck in manual culture plate reading by automatically triaging plates into three categories: ‘significant’, ‘non-significant’ or ‘negative’, and ‘for review’.

On average, results present a high percentage of non-significant or negative samples. Being able to triage these out of the workflow provides significant efficiencies in time and focuses skilled staff on more complex tasks that require their expertise. With laboratories in the US reporting difficulties finding skilled personnel in this field, only a third of the qualified staff required annually graduating each year, and over a fifth of the current workforce due to retire in the next 5 years, using skilled staff wisely is essential to managing workflows.

Unlike large-scale automation solutions, with the APAS Independence you get the benefits of standardisation, but in a small, affordable and flexible footprint designed to easily integrate with the majority of laboratories.
The APAS Independence triages plates using sophisticated machine learning algorithms built on input from real microbiologists and computer vision experts. The algorithms are specific for specimen type and media used, and can quantify growth and identify organism morphologies. These results are then processed by decision packages based on national and international guidelines. Trials show that the instrument provides consistent reproducible results and is as accurate as a highly experienced microbiologist.\(^5\)

**Designed by microbiologists for microbiologists**

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### Input
For accurate and reliable results.
- Complex algorithm
- Machine learning

### Output
Culture plates are sorted into the following:
- Significant growth
- Non-significant growth (negative)
- For review
Streamline your workflow

The intuitive nature of the APAS Independence means your workflow remains the same no matter what modules are used.

Training on the Instrument is easy, and module-specific training can be added when required.

Step 1
Load plates into the quad stack carriers and place into the instrument.
Up to 60 plates per carrier
Up to 4 carriers
= 240 plates

Step 2
Use the touchscreen to start a session.

Step 3
The APAS Independence takes images of each plate and interprets each one within seconds.

Step 4
Sample results are instantly transferred to LIS as each sample is processed.

Step 5
Monitor the output stations for actioning as required.
Transfer plates from positive output carriers to microbiologist for further review. The designated plates with no significant growth are transferred in accordance with laboratory protocols.

Incorporating the APAS Independence into your workflow
The APAS Independence brings intelligent plate reading to microbiology labs, providing real efficiencies. By automatically removing negative or non-significant plates out of the workflow, it delivers reliable and consistent results three times faster than a highly skilled microbiologist. This allows microbiologists to turn their attention to more complex plates.

Its small footprint, compatibility with most LIS and simple cleaning protocols ensure it integrates seamlessly in busy laboratories. The technology makes good financial sense, as it works with most media, including split plates, does not require laboratory remodelling to function effectively. New modules to expand operation are available for a fraction of the cost of a new instrument.

**Fast**
Improve your team’s efficiency and streamline laboratory workflows with technology that is three times faster than a trained microbiologist.

**Accurate**
Receive consistent and reliable reports from a market-leading, tried and tested instrument.

**Staff satisfaction**
Focus microbiologists on complex, significant growth plates that require their expertise for accelerated patient care.

**Cost effective**
Only pay for what you need thanks to APAS Independence’s modular system, with the option to add additional capabilities via extra modules.

**Accelerated results**
Analyse results more swiftly, facilitating faster delivery of patient test results.

**Better management of resources**
- Microbiologist assessment
- Further work
- Report generated
- **REMOVED FROM WORKFLOW**
Save more than time

The APAS Independence was designed to alleviate the bottleneck in bench reading culture plates. But it impacts across many aspects of managing an efficient and effective microbiology lab.

- **Budget management**
  Helps avoid budget overruns with predictable costs year on year.

- **Increased workload**
  Adding Analysis Modules allows for optimal throughput.

- **Process improvement**
  Reduce manual handling and cross contamination risks.

- **Quality and consistency**
  Reduces natural variation in the manual plate reading process.

- **Staff satisfaction**
  Utilise highly trained staff on cases that require their expertise.

- **Time management**
  Improve your team's efficiency with shorter turn around times.

- **Workplace injury**
  Reduces potential RSI risks and staff downtime costs.
Trialled and tested

Don’t just take our word for it.

Pilot Study and 10,000 Patient Clinical Trial
An initial pilot study was conducted in Australia demonstrating a high sensitivity, specificity, and clinical utility for the APAS technology. This was followed up by a 10,000-patient clinical study that was used as the basis for obtaining FDA clearance for the Urine Analysis Module. This trial was conducted at two sites within Australia, and one site in the US.

The results of these studies indicated that APAS delivered a sensitivity of >98% when considering the application within the laboratory, and that APAS was able to perform at least as effectively as a microbiologist. These studies also highlighted the fact that variability exists between microbiologists, and the microbiologists themselves are an imperfect truth.

Several manuscripts have been published in high impact peer reviewed microbiological journals.

St Vincent’s Melbourne – Independent Evaluation of the APAS Independence
St Vincent’s performed an in-depth evaluation of the APAS Independence instrument that involved over 3,000 urine samples. The results from APAS compared favourably with routine reporting with a sensitivity of 93.2% and specificity of 90.1%. Moreover, implementation of APAS-assisted workflow modifications suggested that efficiencies were possible in specimen processing.

Users of the instrument also reported a high level of engagement and considered the availability of imaged cultures as a key feature. The results of this evaluation were presented at ECCMID in 2018, the premier international conference for microbiology.

Independent evaluation – Australian Private Pathology
A private pathology company looking at microbiology automation evaluated the APAS Independence with over 3,000 routine urine samples.

In a two-stage study, users evaluated the level of agreement with the designation from APAS and reported >98.0% positive and negative agreement. A notable finding of this study was that shorter incubation times combined with APAS did not appear to significantly alter diagnostic utility. In addition, a sensitivity of 94.0% was achieved, and the implementation of APAS LIS flags delivered a >99% sensitivity when compared to routine reporting.

To see what your lab can achieve using the APAS Independence, contact us today.

sales@cleverculturesystems.com
Making a real difference in microbiology

Clever Culture Systems is a joint venture company that brings together experts with experience in medical science, drug and diagnostic product development, and pathology.

The joint venture between LBT Innovations in Australia and Hettich Holding Beteiligungs- und Verwaltungs-GmbH in Germany is focused on delivering products that meet a real need and make a real difference to microbiology labs around the globe.

**LBT Innovations**
Based in Adelaide, South Australia, LBT Innovations is an Australian developer of clinical and diagnostic technology. The company has so far created two breakthrough products in microbiology automation, including APAS®: a revolutionary automated culture plate reading, interpretation and reporting technology.

**Hettich Holding Beteiligungs- und Verwaltungs-GmbH**
Located in Germany, Hettich Holding Beteiligungs- und Verwaltungs-GmbH (Hettich Holding Investment and Management) is one of the world’s most successful manufacturers of automated laboratory equipment. The company is widely recognised for the introduction of the first microprocessor-controlled and robotically integrated centrifuges.

References

3. The Lewin Group Inc. the value of diagnostics innovation adoption and diffusion into healthcare 2005.  
5. CLMA – The Laboratory Personnel Shortage.  

Contact us to find your local distributor.

sales@cleverculturesystems.com  
cleverculturesystems.com
### Physical Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>General Description</td>
<td>APAS Independence is an Automated Culture Plate Reader</td>
</tr>
<tr>
<td>Imaging Time</td>
<td>Minimum throughput 200 plates per hour</td>
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<tr>
<td>Input Stack</td>
<td>4 cassettes / 60 plates per cassette</td>
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<tr>
<td>Plate Compatibility</td>
<td>Full plates/bi-plates</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>2000mm x 800mm x 1600mm (78.74” x 31.5” x 62.99”)</td>
</tr>
<tr>
<td>Configuration</td>
<td>Freestanding</td>
</tr>
<tr>
<td>LIS Interface</td>
<td>HL7 Version 2</td>
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<tr>
<td>Weight</td>
<td>330kg (727.5lb)</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Ambient temperature range 15°C–27°C (59°F–81°F)</td>
</tr>
<tr>
<td>Noise Specifications</td>
<td>Humidity: 20%–80% (non-condensing indoor use)</td>
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<tr>
<td></td>
<td>Altitude: Sea level to 3000m (9843ft)</td>
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<tr>
<td>Noise level shall not exceed:</td>
<td>Continuous: 58dBA at 1m (3.3ft)</td>
</tr>
<tr>
<td></td>
<td>Peaks: 70dBA at 1m (3.3ft)</td>
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<tr>
<td>Electrical Input</td>
<td>100-240VAC, 50–60Hz, 6 Amps</td>
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<tr>
<td>Warranty</td>
<td>12 months from date of commissioning</td>
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### Analysis Modules

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<tr>
<th>Module</th>
<th>Description</th>
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<tbody>
<tr>
<td>APAS Urine Analysis Module</td>
<td>APAS Independence suite of interpretive software packages of assessing growth in cultures from a range of specimens</td>
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<tr>
<td>APAS MRSA Analysis Module</td>
<td>Available Analysis Modules</td>
</tr>
<tr>
<td>APAS MRSA Analysis Module (EU/AUS)</td>
<td>Further Analysis Modules in Development</td>
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