



Ambr[®] Clone Selection Powered by Umetrics[®]

For Consistent Screening
and Ranking

Simplifying Progress

SARTORIUS

Ambr[®] Clone Selection Powered by Umetrics[®] Automated Screening and Ranking with Confidence

Ambr[®] Clone Selection complements the experiments conducted with Ambr[®] systems. It simplifies the workflow for cell line screening and ranking.

Users define selection criteria such as cell density, product titer and product quality attributes and assign priority weightings in order to screen and rank clones. The application uses a unique multivariable desirability assessment for clone ranking.

Automation of the clone selection process improves speed and consistency

Valuable scientist time is freed up leading to more accurate analyses

Selection criteria profiles may be stored and share within the same server

This means they are accessible to other users in the team and can be applied to new data sets for consistent selection

A report is generated to record the selection criteria and details of the selected clone candidates

This makes it possible to view and understand the selection comprehensively

Maximizes use of data from Ambr[®] experiments

It can be mined to the full to extract many key insights

Re-evaluate at any time

If selection criteria change during your project, it is fast and straightforward to run the calculation again

Ambr[®] Clone Selection is flexible

The application can be used with data from Ambr[®] 15 and Ambr[®] 250 High Throughput for cell | strain, media and feed screening applications



Ambr[®] Clone Selection

Automated Screening and Ranking

Accelerating Research with Umetrics[®] Expertise

Filter area

Selection criteria are defined here as chosen values of key attributes

The sliders are easily positioned to give an exact set of parameters which will provide the basis for the statistical analysis

Define objective.

Should the variable be

- high - maximized
- low - minimized
- or meet a specific target?

Priority weightings

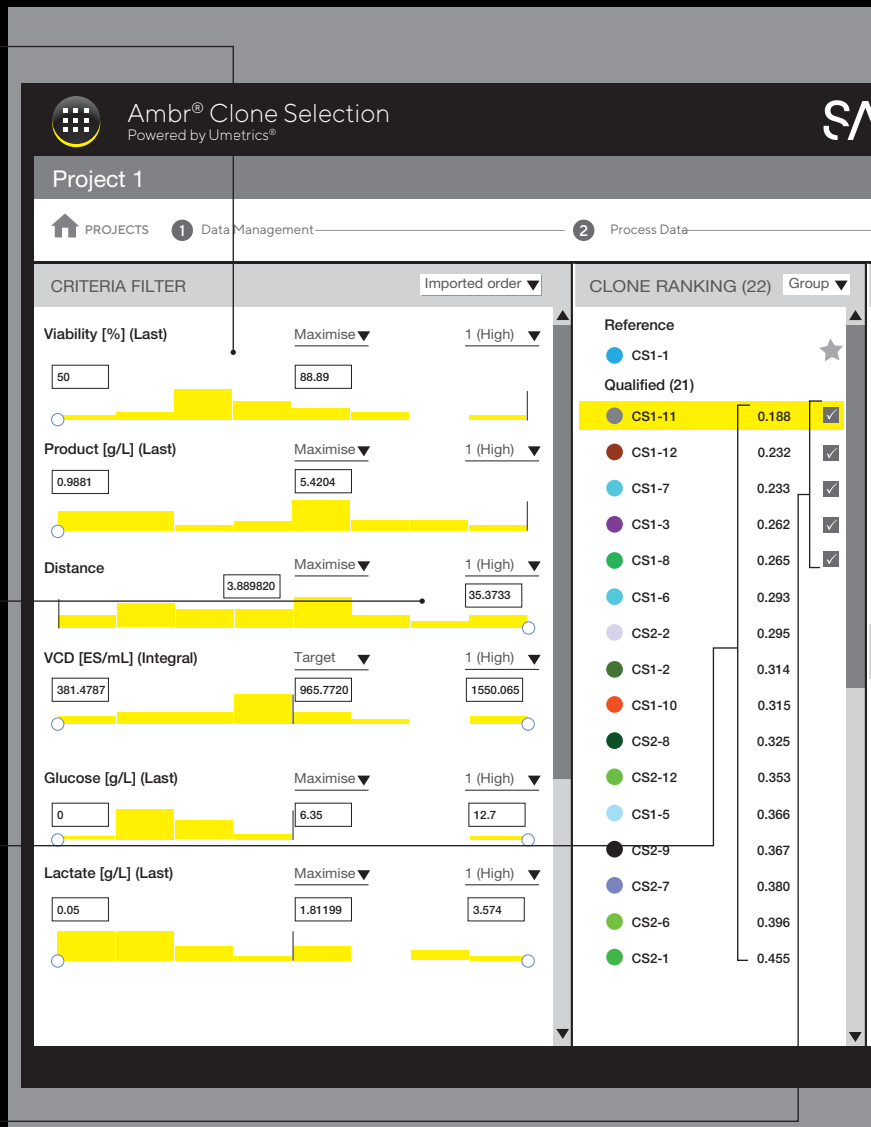
User assigns these for each selection criteria that will be used to determine the ranking order of the clones.

Ranking area

A target proximity value is shown next to each clone that represents the distance from the ideal target. Clones are ranked in order according to their proximity (distance) values.

Clones to report on

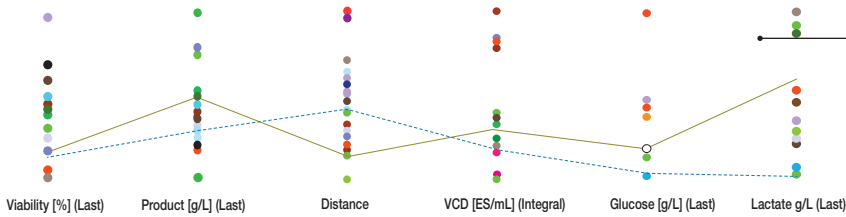
To make a final selection of clones for the report, check the box next to the clone.



Select filter profile

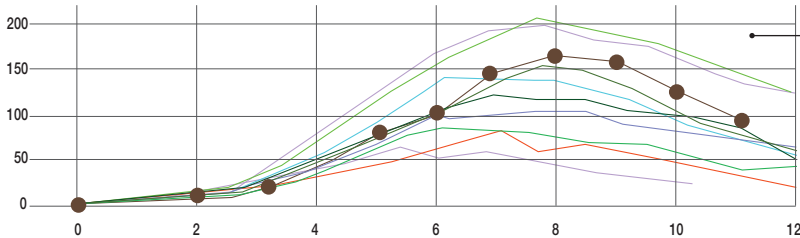
3 Quality Data 4 Clone Selection 5 Report

CLONE/VARIABLE PLOT



RAW DATA - VCD [E5/ML]

VCD [E5/ML]



BACK

Clone variable graph

The maximum, minimum, last or integral values of the chosen variables are viewed alongside each other and can be compared to a similarity variable (reference), if used.

Raw data graph

Depiction of the raw data profile for selected variable and highlighted clone

Process and Quality Data Views

Upload process and | or quality data for investigation. Timely resolved process data relates to measurements repeated several times during the process run. Quality data is gained from single time points measured during or after experiment completion.

Raw data plot

This shows all included clones and their process trend over time (x-axis)

VARIABLE DESCRIPTORS

VCD [E5/mL]
 Last Min Max Intergral

Viability [%]
 Last Min Max Intergral

Product [g/L]
 Last Min Max Intergral

Glucose [g/L]
 Last Min Max Intergral

Lactate [g/L]
 Last Min Max Intergral

pH
 Last Min Max Intergral

IVCD
 Last Min Max Intergral

Qp
 Last Min Max Intergral

CLONES (22)

Reference
 ● CS1-1

Included (22)
 ● CS1-2
 ● CS1-3
 ● CS1-5
 ● CS1-6
 ● CS1-7
 ● CS1-8
 ● CS1-9
 ● CS1-10
 ● CS1-11
 ● CS1-12
 ● CS2-1
 ● CS2-2
 ● CS2-4

RAW DATA - VCD [E5/ML]

Variable selection area

List of all selected process variables. Check box to include variable in the clone selection process.

Clones included

Select a clone here to highlight in the raw data plot.

Create new variable

Calculate a multivariate distance variable between investigated clones and your reference. The distance variable represent similarity to the reference in relation to selected variables. Clones with lower distance are more similar to the reference.

Variable name
Distance

Select variables

Reference clone
CS1-1 - current reference

CANCEL CREATE VARIABLE

A multivariate similarity variable (such as a glycan profile) can be created and used for comparison as a reference. This feature allows you to calculate similarity of your chosen clone to a reference according to at least 5 selected variables.

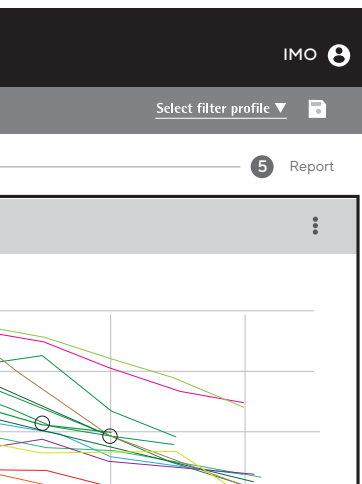
Target proximity (distance) represents similarity to the reference in relation to selected variables. The smaller the target proximity value, the more similar the clone is to the reference.

Clones and reference included

As on process data view. Here the user can set a reference clone as indicated by the star to be used in the selection process

Clone variable plot

Displays distribution of each quality variable and the profile for each selected clone.



Variable selection area

List of all quality variables. Check box to include variable in the clone selection process

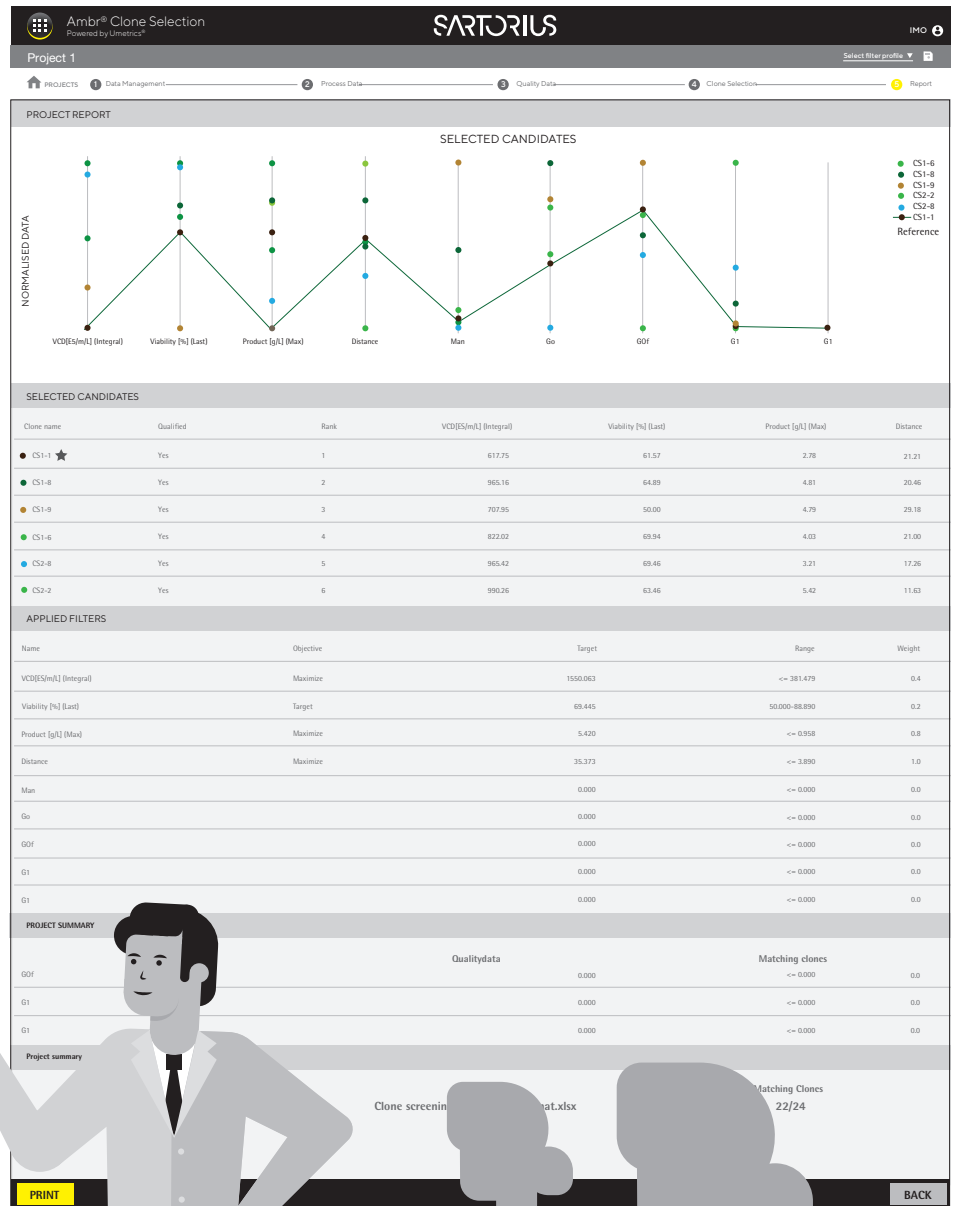
Raw data plot

Displays the data for all clones in the selected variable.

Reporting Function

Select the candidate clones that you want in your report. A printable report (or save as pdf) from Ambr® Clone Selection software application will include:

- Summary plot of selected candidates and any references
- Table of selected candidates and any references
- A summary of the filter criteria used
- A project summary, listing the profile used, the names of the process and quality data files uploaded and number of candidates and variables used



Technical Specification

The Ambr® Clone Selection application is a client-server software solution; which can be run on the same computer to allow clients local server access. For remote server access, clients must have direct network connection to the server installation/computer.

Each license of the Ambr® Clone Selection software permits up to 10 concurrent users. Additional licenses can be purchased if required.

Only a remote server installation can enable concurrent client usage the software application. If client and server are run on the same computer, only a single client can access the software application.

It is the customer's responsibility to supply the server computer, the client computer and to perform the installation of the software.

Minimum server computer specification requirements:

Aspect	Requirement	Comment
Operating system	Windows Professional 7, 8 or 10 (64 bit)	
Processor	Intel i5-2400 or better (4 cores, 3.10 GHz clock, 6MB cache)	
Anti-virus software	The customer is responsible for installing any anti-virus software required on the computer	
Power	No special requirements - domestic socket suitable	
Memory	8 GB or more	
Hard-disk	500 GB or more; 7200 rpm or more	
Display	Intel HD Graphics 2000 or better. Minimum screen resolution for optimal display: 1280 x 1024 pixels	Typical level of graphics found on a standard PC
Network connections	Required for remote server application i.e. if server and client are not on the same machine	Any interface inside a corporate network is the customer's responsibility. Server does not require remote internet access to run in a closed network

Minimum client computer specification requirements:

Aspect	Requirement	Comment
Supported browser to run software application	Google Chrome >70, Microsoft Internet Explorer 11	
Operating system	Windows Professional 7, 8 or 10 (64 bit)	
Processor	Intel i5-2400 or better (4 cores, 3.10 GHz clock, 6MB cache)	
Anti-virus software	The customer is responsible for installing any anti-virus software required on the computer	
Power	No special requirements - domestic socket suitable	
Memory	2 GB or more	
Hard-disk	500 GB or more; 7200 rpm or more	Client data storage is negligible
Display	Intel HD Graphics 2000 or better. Minimum screen resolution for optimal display: 1280 x 1024 pixels	Typical level of graphics found on a standard PC
Network connections	Required for remote server application i.e. if server and client are not on the same machine	Any interface inside a corporate network is the customer's responsibility. Server does not require remote internet access to run in a closed network

Scalability

Single-Use from Cell Line Selection and Process Development to Production Scale

- Geometrical similarity of vessel design from Ambr® Clone Selection upwards
- Consistent mixing and gassing strategies
- Reliable single-use platform
- Perfusion | perfusion mimic capability
- Microcarrier and specialist mixing at low stirring speed capability



Ambr® Clone Selection
Powered by Ulmetrics®

Identification of Critical
Process Parameters, Design
of Experiment (DOE) and
Process Optimization



Ambr® 15
Cell Culture



Ambr® 250 High
Throughput



Biostat® B
Univessel® SU 2L



Biostat STR® 50

Clone Selection

Process Development

Media and Process Optimization

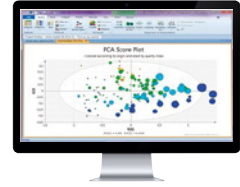
Predictive

Similar Geometry and Sensors

Data Acquisition, Monitoring
and Control of Bioprocesses



Real-Time Multivariate Statistical Process
Monitoring, Cultivation Monitoring
Real-Time Release Testing



Multivariate Data Analysis of Large
Process Data Sets to Identify Key Trends,
Correlations and Troubleshoot



Biostat STR® 200

Biostat STR® 500

Biostat STR® 1000

Biostat STR® 2000

Production

Scalable

- scaling up from 0.025 L to 1000 L

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