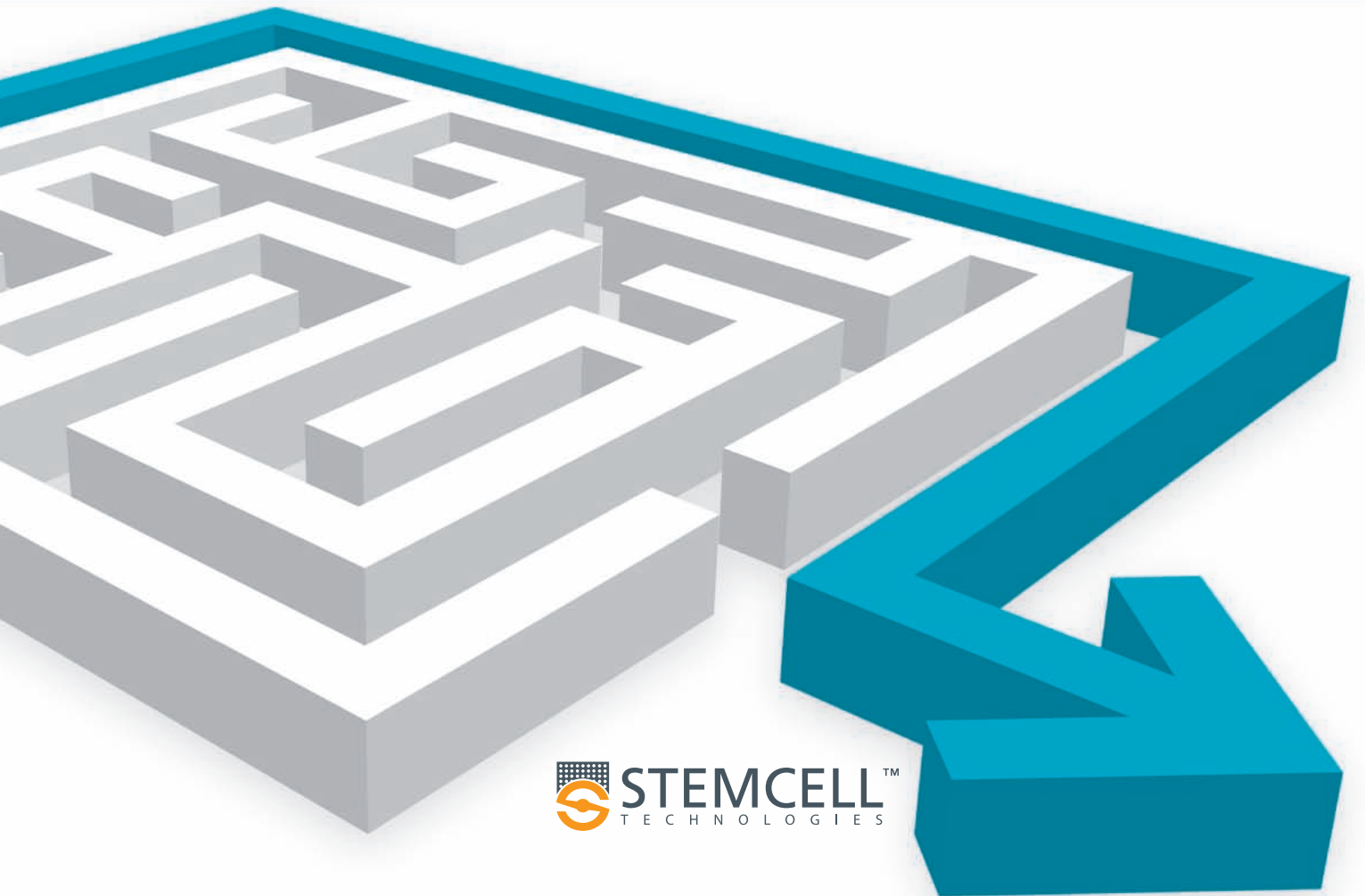


The Smart Way To The Right Clone

ClonaCell™

Products For Cell Line Development



 **STEMCELL™**
TECHNOLOGIES

Table of Contents

- 3 ClonaCell™ Products for Cell Line Development
- 4 Rapid & High Throughput Cell Line Generation
- 5 Use of Semi-Solid Media to Ensure Diversity of Clones
- 6 Products for Selection and Cloning of CHO Cells
- 8 Products for Adaptation and Expansion of CHO Cells
- 9 Products for Hybridoma Generation
- 10 Automated High Throughput Colony Isolation With ClonaCell™ EasyPick

STEMCELL Technologies Inc., a leader in specialty cell culture media, cell separation products and cell based reagents, is a biotechnology company based in Vancouver, Canada. Driven by science, STEMCELL Technologies delivers over 1000 products to more than 70 countries worldwide. To learn more about how STEMCELL Technologies helps make research work, visit www.stemcell.com.

ClonaCell™

Products for Cell Line Development



STEMCELL Technologies' ClonaCell™ product line offers an efficient method for selecting and cloning transfected cells and hybridomas compared to traditional methods.

Selection in liquid culture often leads to the isolation and screening of duplicates of the same clone. ClonaCell™ methylcellulose-based semi-solid media allow single cells to grow into discrete colonies. Therefore, using ClonaCell™ media ensures the isolation of unique clones, resulting in greater clone diversity and a higher probability of identifying rare, high quality, and high yielding clones.

A variety of ClonaCell™ products are available, including products for hybridoma development and cell line development for use with CHO cells and other cell lines.

To find out more about ClonaCell™ products, please visit www.clonacell.com.

Why Use ClonaCell™?

QUALITY. Every isolation results in a unique clone, increasing the probability of finding rare, high yielding clones.

SPEED. Eliminates cloning by limiting dilution and reduces downstream subcloning and screening.

THROUGHPUT. Automated isolation of approximately 300 clones per hour is possible using the ClonaCell™ EasyPick platform.

Rapid & High Throughput

Cell Line Generation

Simultaneous selection and cloning using ClonaCell™ methylcellulose-based semi-solid media can generate stable cell lines in as little as 14 days.

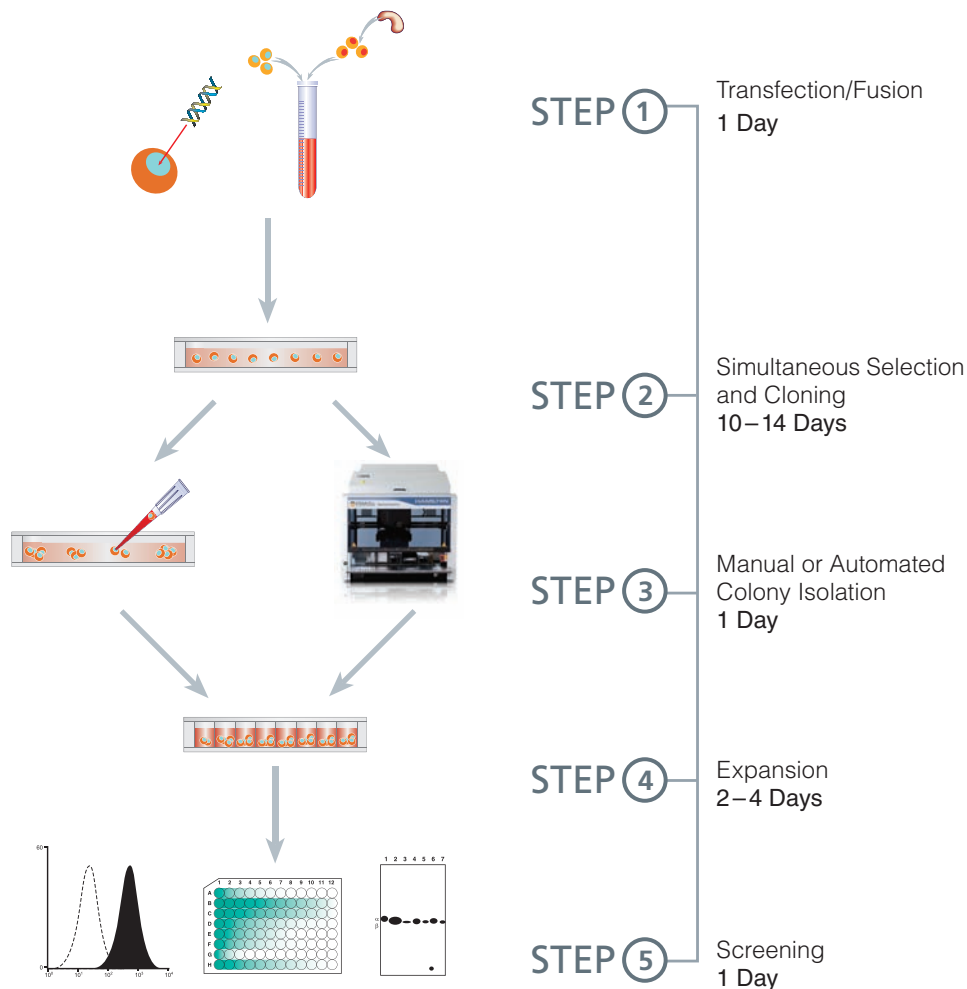
Using ClonaCell™ also:

- Eliminates the need for cloning by limiting dilution
- Results in a high probability of clonality, thereby reducing the need for downstream subcloning and screening
- Offers the option for automated high throughput colony isolation with the ClonaCell™ EasyPick platform

Time Comparison of Cloning Using Liquid Media Versus ClonaCell™

LIQUID MEDIA	TIME (DAYS)*	CLONACELL™	TIME (DAYS)*
Transfection/Fusion	1	Transfection/Fusion	1
Selection and Cloning by Limiting Dilutions	14	Selection and Cloning	10 - 14
Screening	1	Colony Isolation	1
Subcloning by Limiting Dilutions	14	Expansion	2 - 4
Screening	1	Screening	1
Total Days	31	Total Days	15 - 21

*Estimated times will vary depending on volume of work

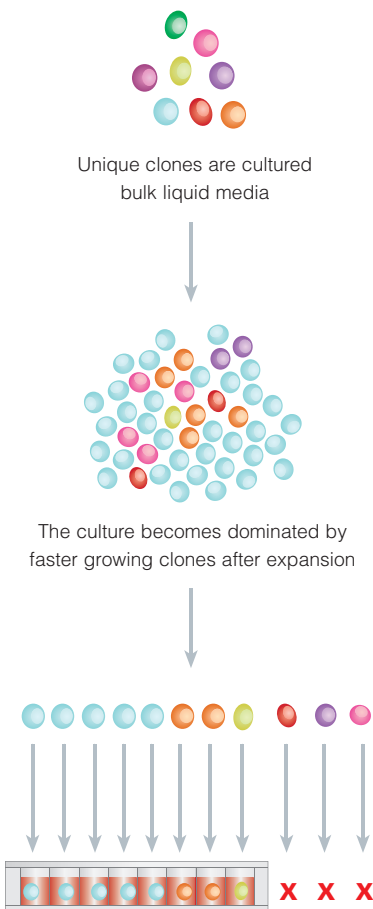


Use of Semi-Solid Media to Ensure Diversity of Clones

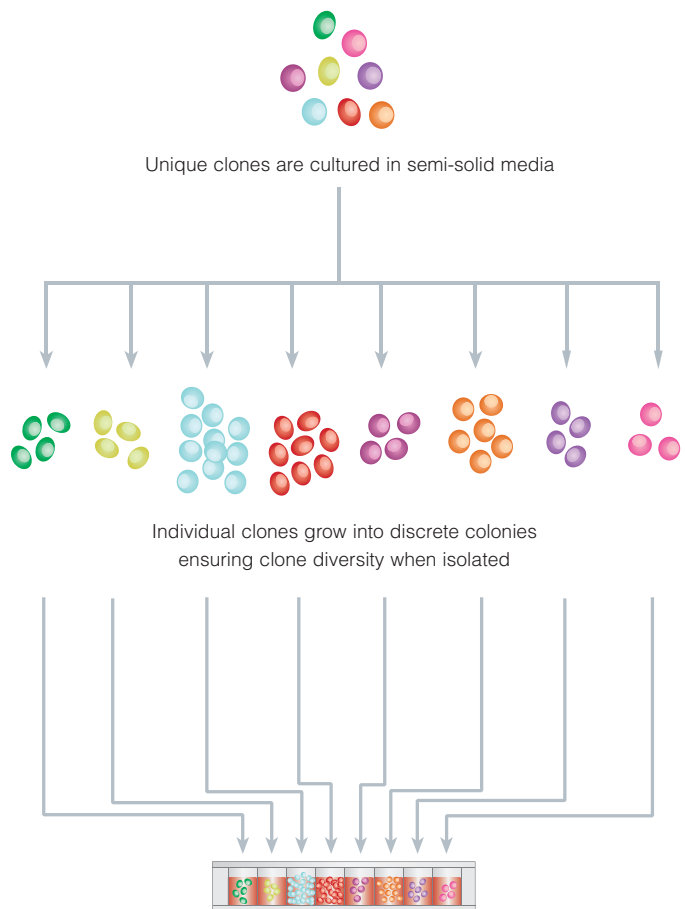
The fastest growing clones are often not the highest producing clones. Selection in bulk liquid culture, however, leads to a mixture of slow- and fast-growing cells. Eventually, the culture becomes dominated by the faster growing clones which leads to lower clone diversity.

The use of ClonaCell™ semi-solid media overcomes this limitation because single cells grow into discrete clonal colonies. Not only does this ensure that each colony isolated is derived from a unique clone, it also ensures that both slow- and fast-growing clones are isolated. This increases the probability of obtaining rare, high quality, and high yielding clones.

Selection & Cloning in Liquid Media



Simultaneous Selection & Cloning in ClonaCell™ Semi-Solid Media



Products For

Selection and Cloning of CHO Cells



Chemically defined, animal component-free and serum-containing medium formulations are available for the selection and cloning of CHO cells.

Chemically Defined Media

Chemically defined media can be used when a protein-free and animal component-free formulation is required.

PRODUCT: ClonaCell™-CHO CD
CATALOG #: 03815 90 mL

ClonaCell™-CHO CD is a methylcellulose-based semi-solid medium recommended for the selection and cloning of CHO cells. The medium is chemically defined, protein-free, animal component-free, and does not contain L-glutamine or selective agents. The medium is suitable for dihydrofolate reductase (DHFR) and glutamine synthase (GS) selection.

PRODUCT: ClonaCell™ FLEX
CATALOG #: 03818 45 mL

ClonaCell™ FLEX is a base methylcellulose medium recommended for the selection and cloning of mammalian cells. The medium is chemically defined, protein-free, animal component-free, and does not contain L-glutamine or selective agents. The FLEX format enables greater flexibility as it allows the user to add an equal volume of their own 2X liquid medium. The medium is suitable for DHFR and GS selection.

Animal Component-Free Media

Animal component-free media can be used for applications where a serum-free medium is required and the presence of recombinant proteins is acceptable.

PRODUCT: ClonaCell™-CHO ACF
CATALOG #: 03816 90 mL

ClonaCell™-CHO ACF is a methylcellulose-based semi-solid medium recommended for the selection and cloning of CHO cells. The medium contains recombinant proteins, is animal component-free and does not contain L-glutamine or selective agents. The medium is suitable for DHFR and GS selection.



Serum-Containing Medium

Serum-containing medium is a robust medium for cloning and selection of CHO cells and other cell lines. It can be used for applications where the presence of serum is acceptable.

PRODUCT: ClonaCell™-TCS
CATALOG #: 03814 80 mL

ClonaCell™-TCS is a semi-solid medium recommended for the selection and cloning of cell lines including CHO, BHK-21 and HEK-293. The medium contains methylcellulose, pre-selected FBS and BSA, and does not contain selective agents.

Chemically defined and animal component-free media offer the following advantages:

- Decreased risk of introducing adventitious agents
- Increased process consistency

Products For

Adaptation and Expansion of CHO Cells



Chemically defined or animal component-free liquid media formulations that have been optimized for use with our semi-solid media are available for the adaptation or expansion of CHO cells.

Chemically Defined Medium

PRODUCT: ClonaCell™-CHO CD Liquid
CATALOG #: 03817 500 mL

ClonaCell™-CHO CD Liquid is a liquid medium recommended for adaptation or expansion of CHO cells. The medium is chemically defined, protein-free, animal component-free, and does not contain L-glutamine or selective agents. The medium is suitable for DHFR and GS selection.

Animal Component-Free Medium

PRODUCT: ClonaCell™-CHO ACF Supplement
CATALOG #: 03820 2.5 mL



ClonaCell™-CHO ACF Supplement is a 40X liquid medium supplement recommended for the cloning or culture of CHO cells. The medium contains recombinant proteins, is animal component-free and does not contain L-glutamine or selective agents. The medium is suitable for DHFR and GS selection.

Products For Hybridoma Generation



ClonaCell™-HY products offer a complete solution for the development of monoclonal antibodies, from cell fusion to the selection and growth of hybridomas.

PRODUCT: ClonaCell™ FLEX
CATALOG #: 03818 45 mL

ClonaCell™ FLEX is a base methylcellulose medium recommended for the selection and cloning of mammalian cells. The medium is chemically defined, protein-free, animal component-free, and does not contain L-glutamine or selective agents. The FLEX format enables greater flexibility as it allows the user to add an equal volume of their own 2X liquid medium.

PRODUCT: ClonaCell™-HY Kit
CATALOG #: 03800 1 Kit

With the ClonaCell™-HY method, a methylcellulose-based semi-solid selection medium is used to combine HAT selection and the cloning of hybridomas in one step. Single cell-derived hybridomas stay together in the semi-solid medium as they grow to form monoclonal colonies. The hybridomas can be easily picked and screened, and then expanded to produce the desired antibody. The kit contains one bottle of each: ClonaCell™-HY Medium A, B, C, D, E and ClonaCell™-HY PEG. Kit components can be purchased separately.

PRODUCT: ClonaCell™-HY Medium D Without HAT
CATALOG #: 03810 90 mL

ClonaCell™-HY Medium D Without HAT is a methylcellulose-based semi-solid medium that does not contain any selection reagents. This medium is used after fusion of splenocytes and myeloma cells to select (if an appropriate selective reagent is added) and clone hybridomas in one step.

ClonaCell™-HY Kit (Components Can Be Purchased Separately)

CLONACELL™-HY PRODUCT	VOLUME	DESCRIPTION	CONTAINS	CATALOG #
Medium A (Pre-Fusion)	500 mL	Myeloma growth medium	Pre-selected serum, gentamycin, and supplements	03801
Medium B (Fusion)	500 mL	Medium used to wash cells prior to cell fusion and for use during fusion	Gentamycin	03802
Medium C (Recovery)	100 mL	Fusion recovery medium to promote hybridoma viability	Pre-selected serum, gentamycin, and supplements	03803
Medium D (Selection & Cloning)	90 mL	Semi-solid HAT hybridoma selection medium	Methylcellulose, pre-selected serum, HAT, gentamycin, and supplements	03804
Medium E (Growth)	500 mL	Hybridoma growth medium	Pre-selected serum, HT, gentamycin, and supplements	03805
Polyethylene Glycol (PEG)	1.5 mL	Pre-tested solution for cell fusion	50% PEG	03806

Automated High Throughput Colony Isolation with **ClonaCell™ EasyPick**



STEMCELL Technologies' automated platform for cell line generation merges the rapid selection and cloning of cells using ClonaCell™ media with Hamilton Company's 30 years of experience in robotics to meet the three most important aspects of developing cell lines for biopharmaceutical production: quality, speed and throughput.



To see the ClonaCell™ EasyPick in action,
please visit www.clonacell.com.

Speed and Throughput

The ClonaCell™ EasyPick platform is the world's fastest system for automated mammalian colony isolation. With the ability to perform approximately 300 clone isolations per hour,* the ClonaCell™ EasyPick not only improves process consistency, but presents significant time savings over manual colony picking or other methods for cell line cloning and selection.

*Based on averaged values that include image acquisition time, image analysis time and plate/lid movement time.



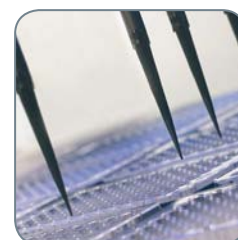
Process Safety

The ClonaCell™ EasyPick system uses disposable tips for the picking process. This minimizes the risk of cross contamination and bacterial contamination. A controlled and smooth tip pick-up and disposal by HAMILTON's CO-RE (Compressed O-Ring Expansion) technology further decreases the risk of aerosol formation.



Multi-Parameter Selection

HAMILTON's proprietary EasyPick software uses multiple parameters that are custom-defined and weighted to meet the requirements of each user. The custom-programmed software ensures process consistency and reliability in a manner tailored to each user's needs. Parameters include colony size, circularity of colonies and distance between colonies.



Quality and Reliability

Each module is tested with criteria that are higher than those required for the instrument as a whole. Pipetting channels are tested for 10 million cycles during design and core parts are manufactured by HAMILTON to the highest tolerances.



Scalability and Versatility

The ClonaCell™ EasyPick platform is designed for modularity and scalability. It is possible to configure the ClonaCell™ EasyPick to allow for the automation of upstream or downstream processes such as cell culture or ELISA through the integration of additional platforms. The exchange of modular carriers for other applications enables versatility on the same platform. This allows for more efficient resource management to meet the changing demands of drug discovery.



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