

CELL LINE DEVELOPMENT PRODUCTS

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ClonaCell™ Products for Cell Line Development

The ClonaCell™ product line from STEMCELL Technologies offers innovative solutions for cloning mammalian cell lines and hybridomas.

Save time and resources during the development of mammalian cell lines with ClonaCell™ specialized cloning media. Semi-solid cloning with ClonaCell™ methylcellulose-based media is a superior cloning method that allows you to overcome the challenges of traditional limiting dilution cloning for developing mammalian cell lines. ClonaCell™ media streamline your cell line development workflow by achieving a high probability of monoclonality and high clonal diversity in a single cloning step.

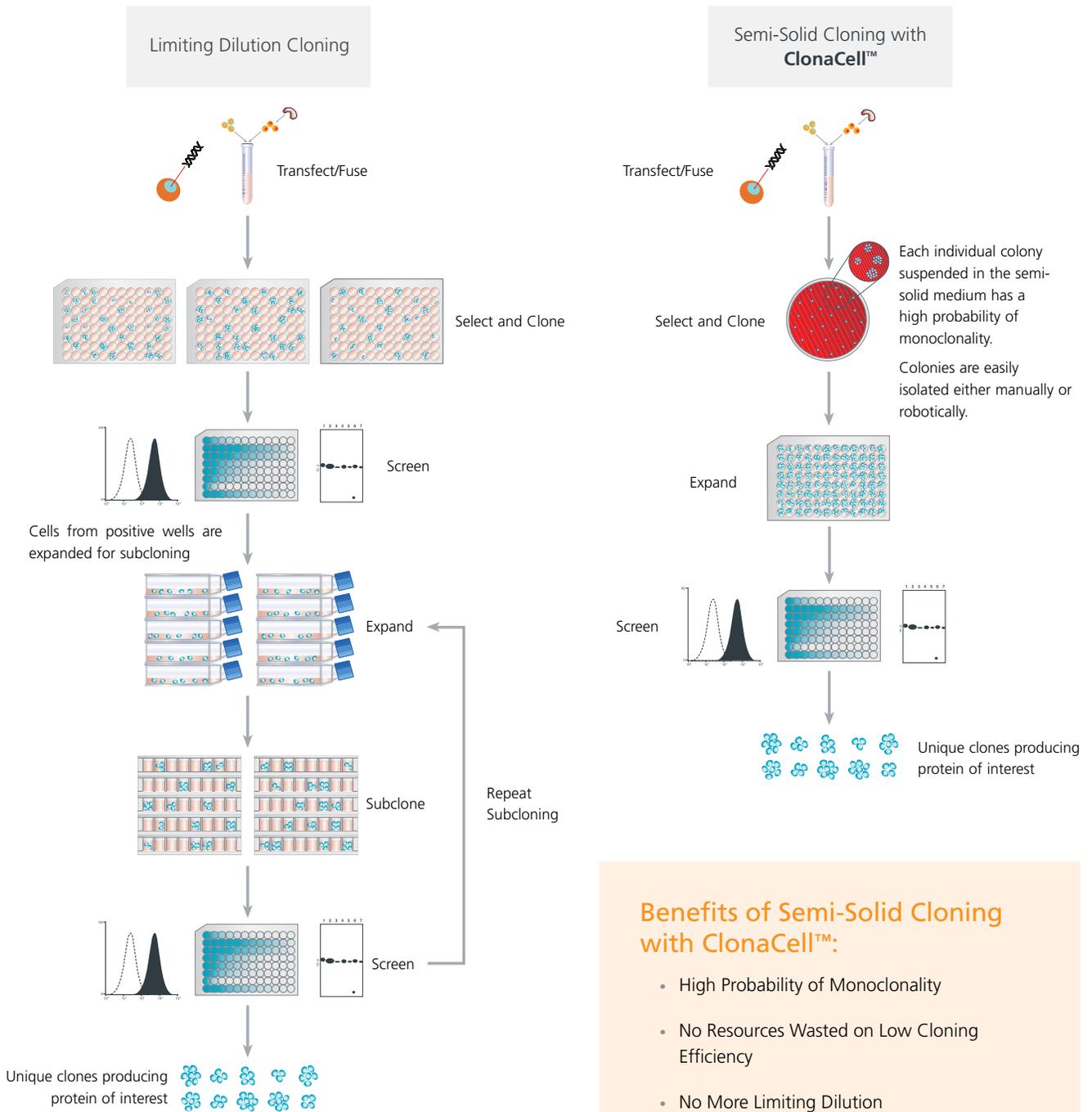
STEMCELL Technologies provides ClonaCell™ products for cloning CHO cells and hybridomas, including animal component-free, chemically defined and pre-screened serum-containing formulations. With uncompromising quality, innovative cloning techniques and technology for automation of cell line development, ClonaCell™ products help you to take the smart way to the right clone.



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

Semi-Solid Cloning for Cell Line Development

Semi-solid cloning saves time and materials for cell line development. During traditional limiting dilution cloning, individual wells may contain more than one clone; therefore, subcloning is essential to obtain a monoclonal culture. During semi-solid cloning, however, individual cells are immobilized within the viscous medium and grow into discrete, monoclonal colonies. Picking these colonies enables isolation of diverse clones with a high probability of monoclonality in a single cloning step.



Semi-Solid Cloning Delivers a High Probability of Monoclonality

Semi-solid cloning with ClonaCell™ media can achieve the same probability of monoclonality in fewer rounds of cloning and using fewer resources than limiting dilution cloning (LDC), leading to faster cell line development timelines.

In LDC, low seeding densities are used to increase the probability of isolating individual cells in unique wells. Statistically, however, some wells will be seeded with more than one cell, even at very low seeding densities. Multiple rounds of LDC are therefore required to achieve a high probability of monoclonality.

Semi-solid cloning overcomes these limitations by allowing individual cells to grow into discrete colonies, making it easy to isolate cultures with a high probability of monoclonality.

Estimated Probability of Monoclonality for LDC and Semi-Solid Cloning Experiments*

LIMITING DILUTION CLONING		
Empty Wells (%)	PROBABILITY OF MONOCLONALITY (%)**	
	Initial Round of Cloning	1 st Subcloning Round
30	30.5	65.0
35	35.6	69.2
40	40.6	73.2
45	45.6	77.0
50	50.6	80.6
55	55.6	84.9
60	60.6	87.0
65	65.6	89.8
70	70.5	92.4
75	75.5	94.6
80	80.4	96.4
85	85.3	98.0

SEMI-SOLID CLONING		
Total Colonies per 10 cm Dish	PROBABILITY OF MONOCLONALITY (%)***	
	Initial Round of Cloning	1 st Subcloning Round
160	96.4	99.9
150	96.6	99.9
140	96.9	99.9
130	97.1	99.9
120	97.3	99.9
110	97.5	99.9
100	97.8	>99.9
90	98.0	>99.9
80	98.2	>99.9
70	98.4	>99.9
60	98.7	>99.9
50	98.9	>99.9

*Calculations are based on R. Staszewski, 1984¹ and the webinar "A Smarter Way to Clone"²

**Based on an LDC experiment where 5% of cultures obtained are carried forward for subcloning or downstream experiments

***Based on a semi-solid cloning experiment where the average colony diameter is 0.75 mm, all colonies are picked and any colony which touches or overlaps with another colony gives rise to a polyclonal culture

Learn why rare, high-producing cultures isolated with LDC have a lower probability of monoclonality than a random culture in the same cloning experiment by watching our on-demand webinar.

1. R. Staszewski, Yale Journal of Biology and Medicine (57): 865-868, 1984
2. www.stemcell.com/smarter_way_to_clone



WEBINAR

A Smarter Way to Clone: What You Don't Know About Limiting Dilution Can Hurt Your Probability of Monoclonality
www.stemcell.com/Smarter_Way_To_Clone

Semi-Solid Media for Cloning of CHO Cells



Chemically defined, animal component-free and serum-containing media formulations are available for semi-solid 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 Medium

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 option 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 fetal bovine serum and BSA, and does not contain selective agents.

Liquid Media for Adaptation, Expansion & Cloning of CHO Cells



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

Chemically Defined Media

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 dihydrofolate reductase (DHFR) and glutamine synthase (GS) selection.

Animal Component-Free Medium Supplement

PRODUCT:	ClonaCell™-CHO ACF Supplement
CATALOG #:	03820 25 mL

ClonaCell™-CHO ACF Supplement is an animal component-free media supplement for the culture of CHO cells. The 40X supplement concentrate may be used with your own cell culture medium to significantly increase the cloning efficiency of CHO cells during single-cell cloning for cell line development. It may be used to supplement either liquid or semi-solid protein-free medium.



VIDEO
ClonaCell™-CHO Procedure
www.stemcell.com/Video-ClonaCell-CHO-Procedure

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

- Decreased risk of introducing adventitious agents
- Increased process consistency

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™-HY Kit
CATALOG #: 03800 1 Kit

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

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
AOF Expansion & Cloning Medium	500 mL	Animal origin-free hybridoma growth medium. Also suitable for subcloning.	HT, gentamycin and supplements.	03835
PEG	1.5 mL	Solution for cell fusion	50% PEG	03806

HAT = hypoxanthine-aminopterin-thymidine; HT = hypoxanthine-thymidine; PEG = polyethylene glycol



VIDEO

ClonaCell™-HY Procedure

www.stemcell.com/Video-ClonaCell-HY-Procedure



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 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 suitable for cloning hybridoma and myeloma cells. Appropriate selection reagents may be added to select for hybridoma fusion products or stable myeloma transfectants.

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