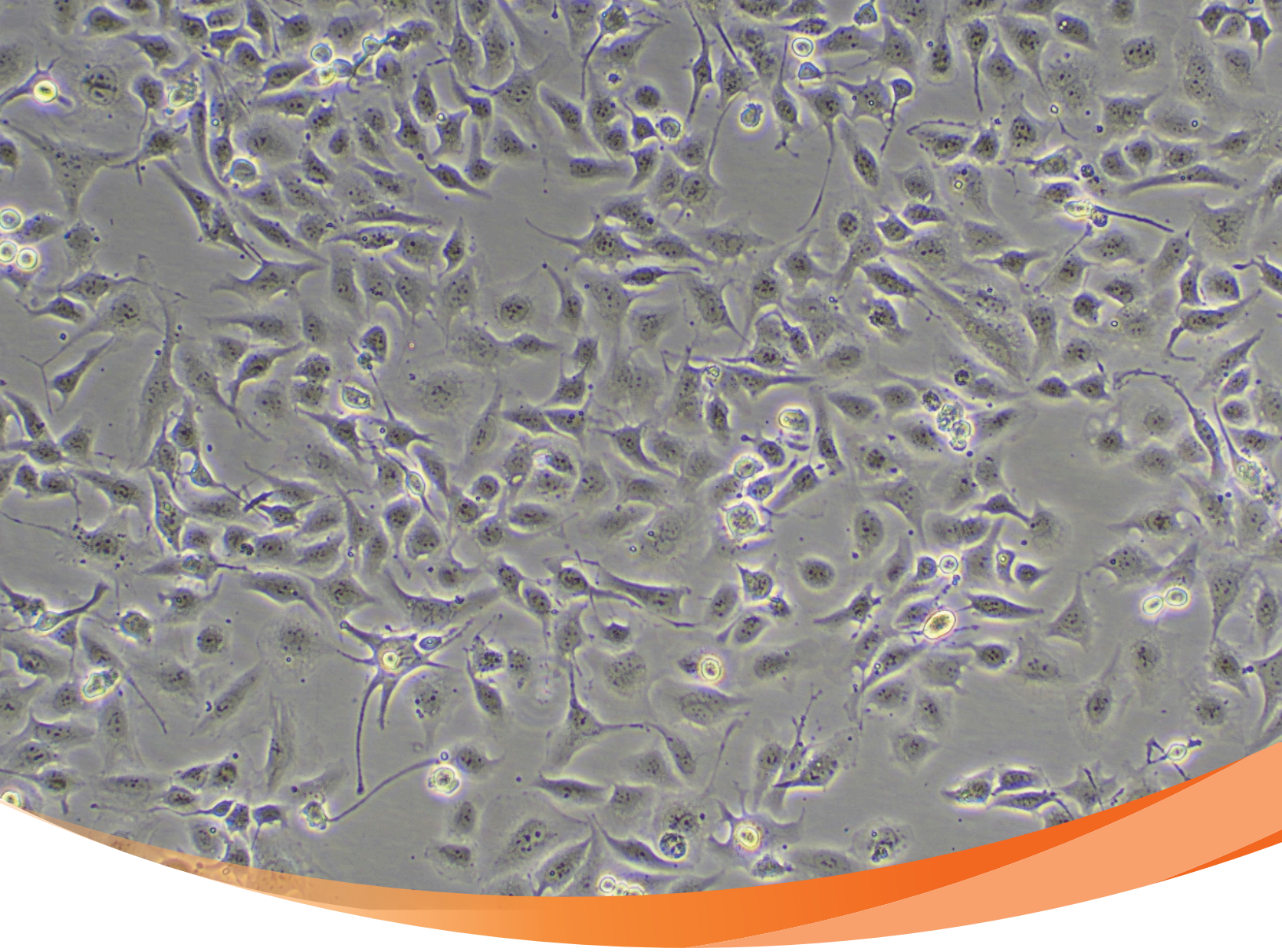


Immortalized Cell Lines

A guide to selecting and using renewable cell models

• 1-866-757-2414 • www.abmgood.com • inquiries@abmgood.com

© 2026 Applied Biological Materials. All rights reserved. MM01020004-202609

abm®
The Cell Designer

What Are Immortalized Cell Lines

Immortalized cell lines are cells that can continue dividing under appropriate culture conditions. Unlike most primary cells, which eventually stop proliferating as they reach replicative senescence, immortalized cells can bypass the biological processes that limit cellular lifespan. As shown in Figure 1, this allows them to continue proliferating beyond the finite number of population doublings typical of primary cells.

Immortalization may occur spontaneously or be induced by maintaining telomere length, modifying cell-cycle checkpoints, or introducing viral or cellular factors that support continued proliferation. The resulting cells can be expanded, cryopreserved, and banked, providing a renewable model for long-term research.

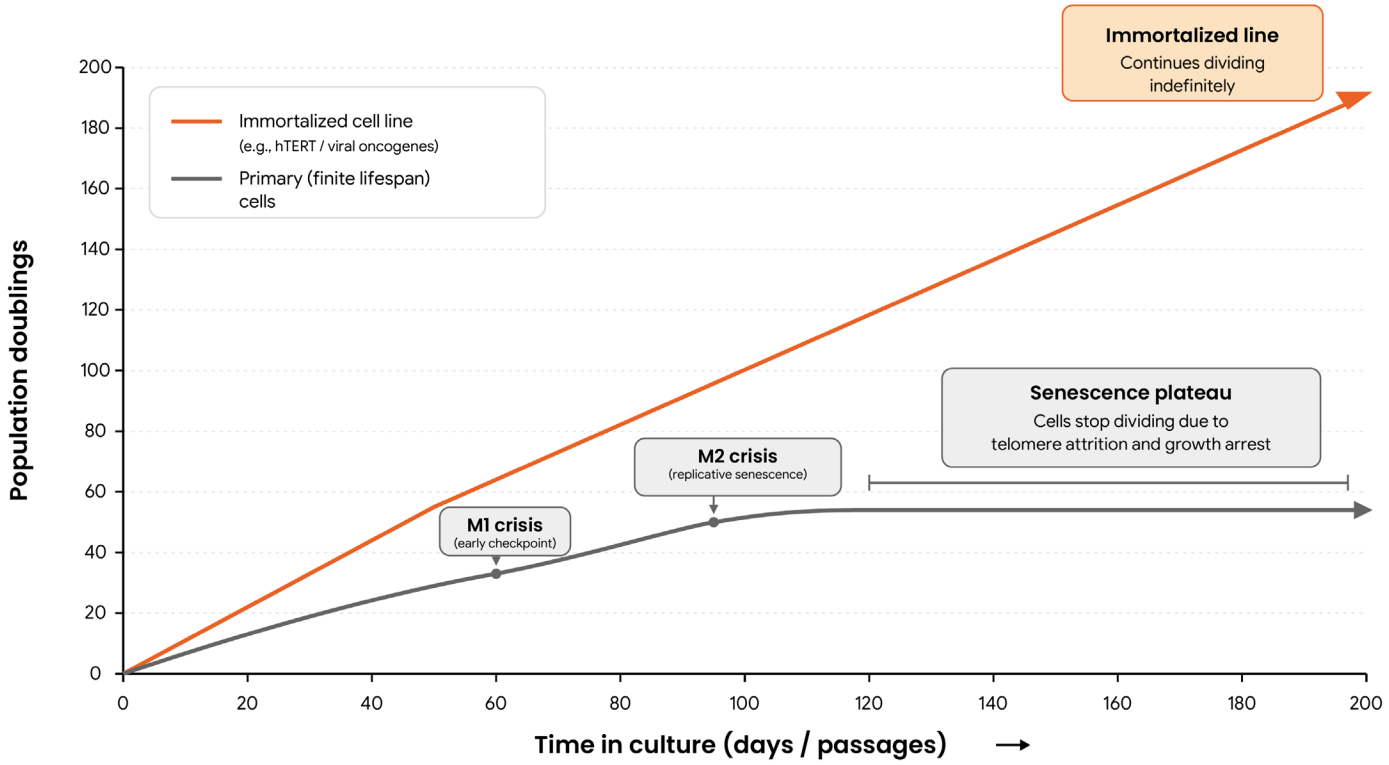


Figure 1 - Primary and immortalized cell proliferation over time.

**Schematic illustration only; proliferation rates and replicative lifespan vary by cell type, donor, and culture conditions.*

How Do Immortalized Cell Lines Compare with Primary Cells

Primary cells often retain more characteristics of their tissue of origin, making them valuable when physiological relevance is the priority. However, their finite lifespan and donor-to-donor variability can make long-term or large-scale studies more challenging.

Immortalized cell lines offer greater longevity, consistency, and scalability. Depending on the cell type and immortalization method, these benefits may come with changes in genotype, phenotype, or cellular behaviour.

Key Differences

Feature	Primary Cells	Immortalized Cell Lines
Lifespan in culture	Finite, with a limited number of population doublings before replicative senescence	Indefinite or greatly extended, with the capacity for continuous proliferation
Physiological relevance	Often closely reflect the characteristics of native tissue	May differ from the parental cells depending on the cell type and immortalization method
Genetic stability	Generally closer to the donor or tissue genotype, especially at early passage	May acquire genetic or chromosomal changes during immortalization or continued passaging
Consistency and supply	Limited supply with potential donor-to-donor variability	Renewable supply with greater experimental consistency
Ease of culture	Often more demanding, with stricter culture requirements and a limited number of passages	Generally more robust and easier to maintain and expand
Scalability and cost	Typically more costly to source, culture, and scale	Generally more cost-effective and scalable

How Are Cells Immortalized

Cell immortalization overcomes replicative senescence to extend cellular lifespan. The optimal strategy depends on cell type, phenotype, and application.

Common Immortalization Methods

Figure 2 highlights three common approaches: hTERT maintains telomeres, SV40 Large T Antigen alters key cell-cycle checkpoints, and EBV drives continued proliferation of human B lymphocytes. Other methods include HPV16 E6/E7, oncogene-based, combined, and spontaneous immortalization. Because suitability varies by cell type, each resulting line should be validated for the intended research application.

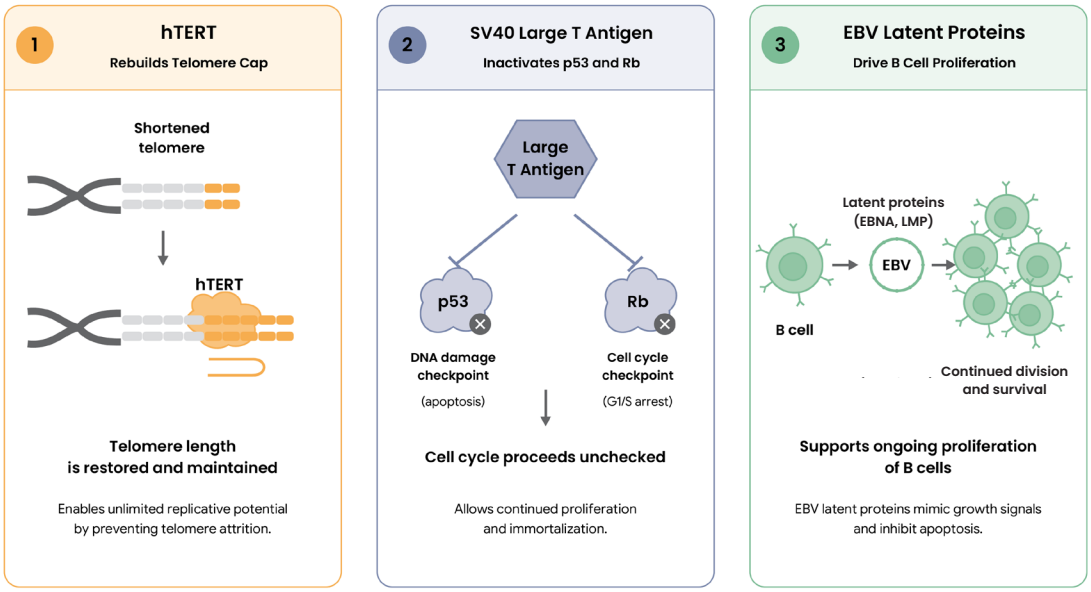


Figure 2 - Comparison of hTERT, SV40 Large T Antigen, and EBV immortalization mechanisms

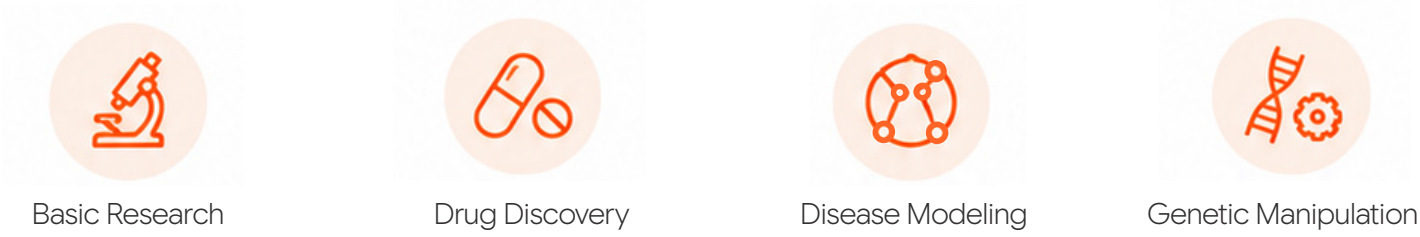
How Do You Confirm a Successful Immortalized Cell Line

Continued growth alone does not confirm that an immortalized cell line is suitable for research. As outlined below, a fit-for-purpose characterization plan should assess the line's identity, contamination status, phenotype, growth characteristics, genetic profile, and immortalization status to confirm it is appropriate for the intended application.



Where Are Immortalized Cell Lines Used

Immortalized cell lines provide renewable and scalable models for a wide range of applications:



Ordering Information

Products	Promoter	Marker	Cat. No.
Lenti-SV40T (Puro) Virus	CMV	Puro	LV613
Lenti-SV40T (tsA58 temp sensitive) (Puro) Virus	CMV	Puro	LV630
Lenti-hTERT-Puro Virus	CMV	Puro	LV615
Lenti-hTERT-2A-CDK4 Virus	CMV	Puro	LV677
Lenti-HPV E6/E7 (Puro) Virus	CMV	Puro	LV617
Lenti-CDK4(R24C)-CCND1-BMI1 Virus	CAG	Puro	LV681
EBV Virus (Epstein-Barr Virus)	N/A	N/A	G229

Scan the QR code to explore our full range of cell immortalization reagents and find the right solution for your research.

Which Immortalization Strategy Fits Your Research

Potential Approach	Research Priority
Consider an hTERT-based approach	Preserve a near-primary phenotype
Consider SV40 Large T Antigen or a combination approach	Achieve robust proliferation
Consider EBV transformation	Establish renewable human B-lymphocyte cultures
Consider HPV E6/E7, hTERT, or a combination approach appropriate for the cell type	Immortalize keratinocytes or epithelial cells
Assess feasibility and optimize one or more approaches	Work with difficult-to-immortalize cells
Evaluate multiple strategies against your project requirements	Support a phenotype-sensitive application

NOTE: These are general considerations rather than universal recommendations. Each resulting cell line should be evaluated for its intended application.

Cell Immortalization Reagents Compatibility Chart

Cell Type	SV40T	hTERT	p53, Rb siRNA	c-Myc T58A	RasV12	Myc+Ras	Bmi1	CDK4	HPV E6/E7	EBV	E1A-E1B	HOXB8, A9, A10
Fibroblasts	✓✓	✓	✓	✓ (rodent)	✓ (rodent)	✓✓ (rodent)		✓	✓		✓	
Epithelial cells	✓✓	✓	✓	✓ (rodent)	✓ (rodent)	✓✓ (rodent)	✓	✓✓	✓✓		✓	
Endothelial cells	✓	✓	✓					✓	✓			
Astrocytes/glia	✓	✓	✓	✓ (rodent)		✓ (rodent)	✓	✓	✓			
Mesenchymal stem cells	✓	✓✓	✓				✓	✓	✓			
Neural stem/progenitor cells		✓					✓✓		✓			
Hematopoietic stem/progenitor cells							✓					✓✓
B lymphocytes										✓✓		
T cells/NK cells												
Rodent primary cells (general)	✓✓	✓	✓	✓	✓	✓✓	✓	✓	✓		✓	✓

✓ = reliable immortalization method
✓✓ = robust immortalization method

Scan to explore our cell models, or contact our team at inquiries@abmgood.com to discuss your project.