ATCC® HUMAN PRIMARY CELLS

Dermal Microvascular Endothelial Cells
Dermal Fibroblast, Adult & Neonatal
Epidermal Keratinocytes, Adult & Neonatal
Epidermal Melanocytes, Adult & Neonatal
Pre-adipocytes
Adipose-derived Mesenchymal Stem Cells

Aortic Endothelial Cells
Aortic Smooth Muscle Cells
Coronary Artery Endothelial Cells
Coronary Artery Smooth Muscle Cells
Pulmonary Artery Endothelial Cells
Pulmonary Artery Smooth Muscle Cells

Lung Smooth Muscle Cells
Lung Fibroblasts
Small Airway Epithelial Cells
Bronchial/Tracheal Epithelial Cells
Bronchial/Tracheal Smooth Muscle Cells
Lobar Bronchial Epithelial Cells
Disease Airway Cells
Primary Lobar Epithelial Cells

Bladder Epithelial Cells (A/T/N)
Bladder Smooth Muscle Cells
Bladder Fibroblast Cells

Prostate Epithelial Cells

Primary Skeletal Muscle Cells

Corneal Epithelial Cells

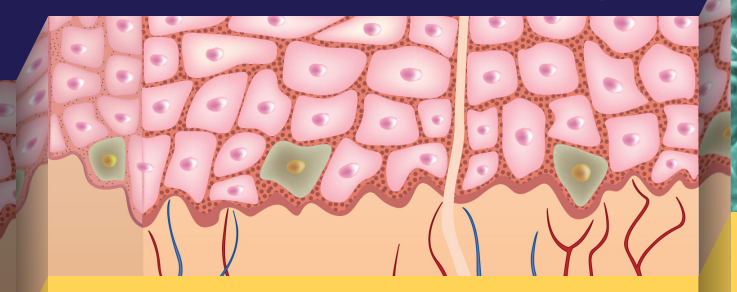
Gingival Fibroblasts
Gingival Keratinocytes

Peripheral Blood Mononuclear Cells (PBMC)
Peripheral Blood CD14+ Monocytes Peripheral Blood CD4+ Cells
Peripheral Blood CD8+ Cells
Peripheral Blood CD19+ Cells
Peripheral Blood CD56+ Cells

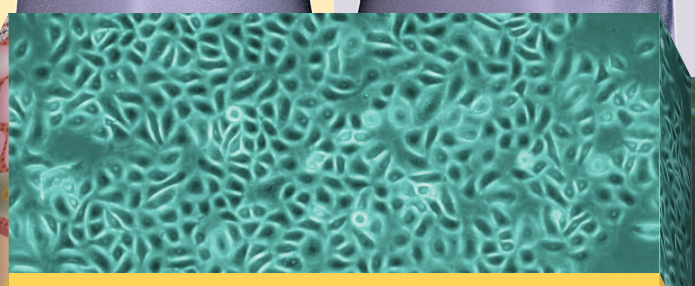
Cord Blood CD34+ Cells
Cord-derived Mesenchymal Stem Cells
iPSC-derived Mesenchymal Stem Cells
iPSC-derived CD34+ Cells
iPSC-derived Monocytes
Peripheral Blood CD4+ Helper T Cells
Peripheral Blood CD8+ Cytotoxic T Cells
Peripheral Blood CD19+ B Cells
Peripheral Blood CD56+ Natural Killer Cells

Cervical Epithelial Cells
Uterine Fibroblast Cells
Uterine Smooth Muscle Cells
Mammary Epithelial Cells
Vaginal Endometrial Cells
Vaginal Epithelial Cells

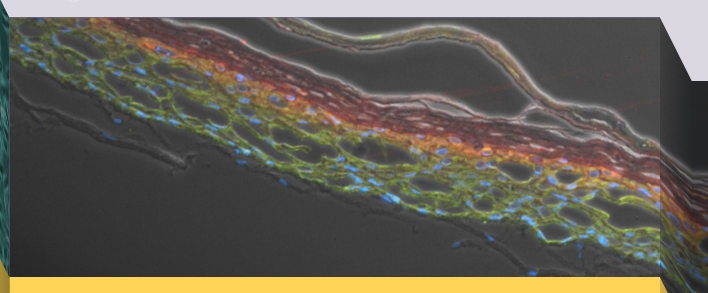
Bone Marrow CD34+ Cells
Bone Marrow Mononuclear Cells
Bone Marrow-Derived Mesenchymal Stem Cells



From *in situ*



To serve as ideal controls to *in vitro* models



To capture the *in vivo* situation

COMPLETE PRIMARY CELL SOLUTIONS FOR ROBUST CELL GROWTH

ATCC offers:

- Primary cell media
- Cell-specific growth kits
- Dissociation reagents
- Cryopreservation media
- Optimized growth protocols
- Primary Cell Culture Guide

WHAT ARE HUMAN PRIMARY CELLS?

- Untransformed
- May display similar gene expression as cells *in situ*
- Many similar physiologic functions as *in vivo*
- Indispensable for a wide range of experiments
- Ideal to examine physiology or disease pathology
- Can reduce animal usage in preclinical experiments

3-D CULTURE MODELS CAPTURE THE *IN VIVO* SITUATION:

- Form functional airway epithelium
- Mucus secretion
- Cilia formation

- Form functional epidermis
- Stratified morphology
- Barrier function

- Form vascular tubules
- Von Willebrand factor & CD31 expression
- AcLDL uptake

- Form Organoids
- Microtissue structure
- Genotypically/phenotypically stable

ATCC®

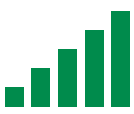
Use the new Human Primary Cell selection guide at
www.atcc.org/primarycellselection

hTERT-IMMORTALIZED PRIMARY CELLS

combine the best of both worlds:

ATCC human telomerase reverse transcriptase (hTERT)-immortalized primary cells combine the *in vivo* nature of primary cells with the growth potential of a continuous cell line

Pros and cons of different cell models for tissue-relevant functional studies

	Primary cells	hTERT-immortalized	Cancer cell lines
Mimic *in vivo* Tissue Phenotype			
Genotypic Stability	Diploid	Diploid/ Near diploid	Aneuploid
Proliferative Capacity	Limited	Extended	Continuous
Inter-experimental Consistency	Varies by donor	Good	Good
Serum requirement for media	Serum-free or low serum	Serum-free in some lines	Serum required

- Epidermal Keratinocytes
- Skin Fibroblasts
- Dermal Melanocytes

- Aortic Endothelial Cells
- Dermal Microvascular Endothelial Cells

- Airway Cells
- Bronchial Epithelial Cells

- Endometrial Fibroblasts
- Mammary Epithelial Cells

- Chondrocyte Fibroblasts
- Mesenchymal Stem Cells
- Superficial Neck Fat, Adipose Cells

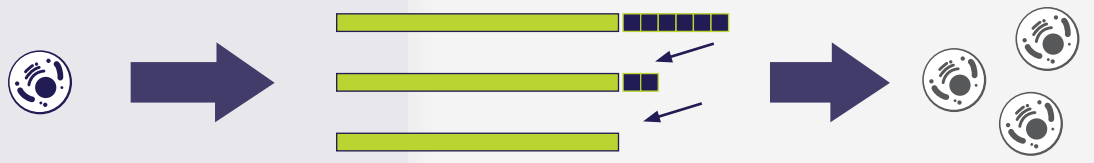
- Renal Epithelial Cells

- Barrett's Esophageal Epithelial Cells
- Pancreatic Duct Cells
- Gingival Epithelial Cells
- Gingival Fibroblasts

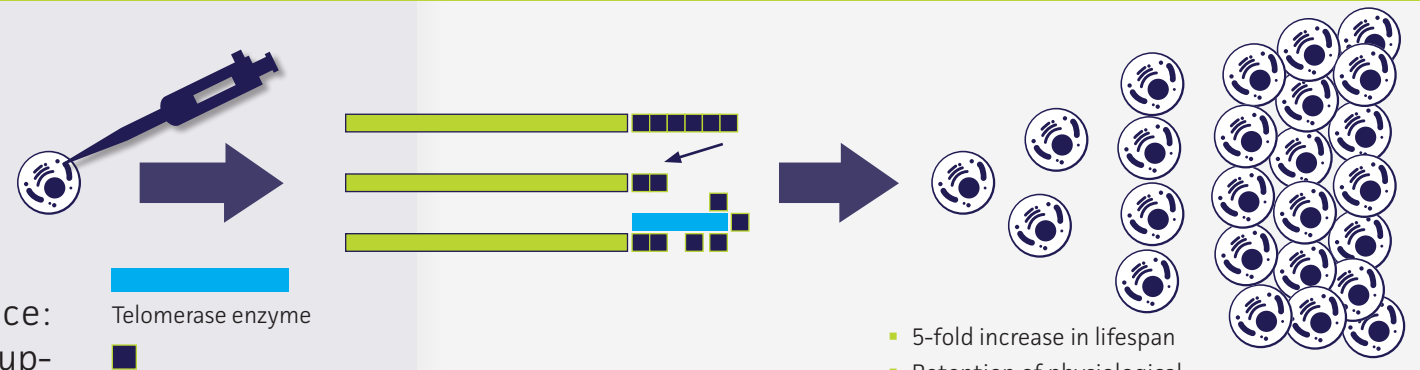
- Retinal Pigmented Epithelial Cells

hTERT-IMMORTALIZATION

- Primary cells are restricted to a finite number of cell divisions
- Telomers are repeat sequences that cap chromosome ends
- This limit is due to the loss of telomeres during cell division



- Transfect target cells with the catalytic subunit of telomerase enzyme (hTERT)
- hTERT catalyzes the replacement of telomere subunits
- The hTERT-expressing cell escapes senescence



Bypassing replicative senescence: Overexpression of telomerase and supportive oncoproteins in primary cells

- 5-fold increase in lifespan
- Retention of physiological characteristics

hTERT-immortalized and normal Primary Cell Culture Guides

Learn all about:

- Growth media formulations
- Culturing conditions
- Seeding densities
- Cell counting
- Confluence
- Cryopreservation
- Subculturing protocols
- Download the guides at www.atcc.org/guides

Browse ATCC's wide variety of hTERT-immortalized primary cells at

www.atcc.org/hTERT

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