

dv
biologics

CELLutions for Innovation

newsletter

Summer 2013

Tools for studying Chronic Kidney Disease Human Renal Fibroblasts

DV Biologics is pleased to offer a new product, human kidney fibroblasts (PU009-F), a cell model that is suitable for genetics, biochemistry, or toxicology research—fully scalable from bench top to high throughput screening. As an excretory organ in the urinary system, the kidney greatly influences an individual's well being by preserving homeostasis through regulating electrolytes, pH, and blood pressure among other control mechanisms. Comprising the majority of interstitial cells in the kidney, renal fibroblasts are responsible for the synthesis of collagen I of the extracellular matrix. Also, renal cortical fibroblasts synthesize erythropoietin, an important glycoprotein hormone that controls the production of red blood cells and renal medullary fibroblasts produce prostaglandins, a class of autocrine or paracrine hormones, which help maintain water and electrolyte homeostasis. Renal interstitial fibrosis, a disorder that may escalate to chronic kidney disease, is often correlated with excessive deposition of extracellular matrix by renal fibroblasts, the regulation of which process is under intensive research.

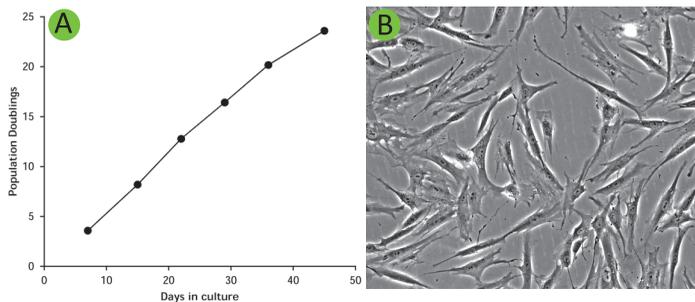


Figure 1. Growth characteristics of PU009-F. A) Growth curve. Cells were grown in I-GRO, dissociated, counted, and subcultured every 7-day period. The results indicate that these cells proliferate in culture for at least five passages, totaling 20+ population doublings. B) Phase contrast photomicrograph. PU009-F cells maintain the typical fibroblast morphology at passage 5.

Although animal cell systems have been useful in the study of renal fibroblasts, results need to be confirmed with cellular systems which more closely resemble the human system. DV Biologics's kidney fibroblasts (PU009-F) can be expanded 20+ population doublings (Fig. 1A), while maintaining their characteristic morphology (Fig. 1B)

and molecular markers (Fig. 2). Immunocytochemical analysis shows they express markers for fibronectin, vimentin and smooth muscle actin (Fig. 3) but lack epithelial marker cytokeratin 18, which confirms purity of the fibroblasts. DV Biologics offers a variety of additional cell types for researching renal and digestive systems and associated diseases including liver cells (PD001F), kidney cells (PU001-F), large intestine cells (PD008-F), and small intestine cells (PD007-F) (Table 1).

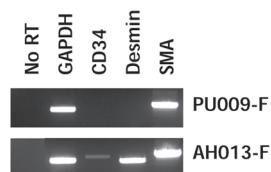


Figure 2. Molecular characterization of PU009-F. Cells were cultured in I-GRO medium to confluence. RNA was extracted and reverse transcribed using oligo-d(T) and random hexamers. The cDNA was PCR amplified using primers specific for GAPDH, CD34, Desmin and smooth muscle actin A (SMA). The no RT templates were amplified using a mixture of specific primers. Peripheral blood mononuclear cells (AH013-F) were included as cell type control. The results indicate that PU009-F cells express SMA but neither CD34 nor Desmin.

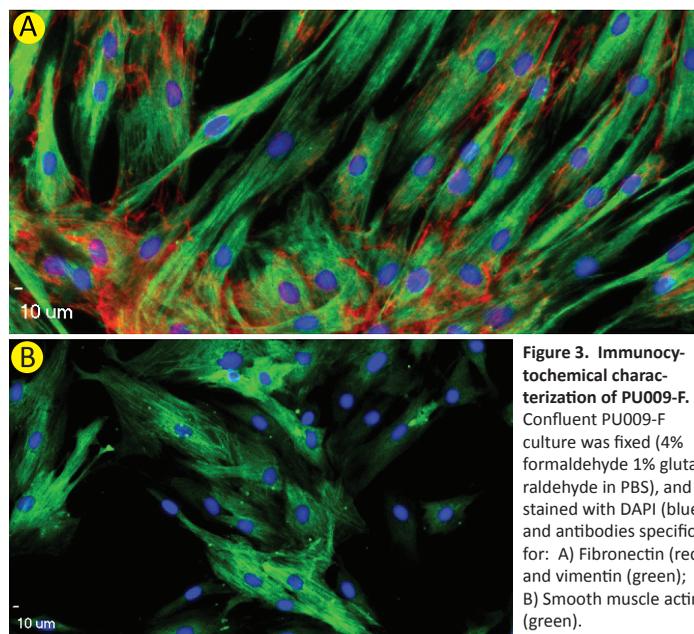


Figure 3. Immunocytochemical characterization of PU009-F. Confluent PU009-F culture was fixed (4% formaldehyde 1% glutaraldehyde in PBS), and stained with DAPI (blue) and antibodies specific for: A) Fibronectin (red) and vimentin (green); B) Smooth muscle actin (green).

As research moves away from animal models, it is often challenging for researchers to find cellular models that best represent the human physiological settings. DV

Biologics offers an expanding product portfolio of unique cell types and tissue-derived products to help meet that challenge. In addition, we offer an extensive array of biological tools and services which enable researchers to conduct relevant investigation in many fields. Please refer to our catalog for a comprehensive list of products. If you don't see the products you are looking for, please contact us. Our team of dedicated scientists is able to customize products to meet your specific research parameters. Our mission is to provide you with the biological tools needed for the innovation of new technology that will one day be used to treat, or prevent, human degenerative disorders and diseases. All of our products are guaranteed and manufactured under ISO 9001:2008 guidelines.

REFERENCES

1. Bachmann S, Le Hir M, Eckardt KU. 1993. Co-localization of erythropoietin mRNA and ecto-5'-nucleotidase immunoreactivity in peritubular cells of rat renal cortex indicates that fibroblasts produce erythropoietin. *J Histochem Cytochem* 41:335-341.
2. Muirhead EE, et al. 1972. Production of renomedullary prostaglandins by renomedullary interstitial cells grown in tissue culture. *Circ Res* 30/31:161-172.
3. Strutz F, and Zeisberg M. 2006. Renal fibroblasts and myofibroblasts in chronic kidney disease. *J Am Soc Nephrol*. 17:2992-2998.

Product Description	Unit of Measure	Catalog Number
<i>Kidney Fibroblasts</i>	<i>5 × 10⁵ cells/vial</i>	<i>PU009-F</i>
Kidney Cells (uncultured)	5 × 10 ⁵ cells/vial	PU001-F
Kidney Epithelial Cells	5 × 10 ⁵ cells/vial	PU002-F
Liver Cells (uncultured)	5 × 10 ⁵ cells/vial	PD001-F
Endothelial Liver Cells	5 × 10 ⁵ cells/vial	PD012-F
Small Intestine Cells (uncultured)	5 × 10 ⁵ cells/vial	PD007-F
Large Intestine Cells (uncultured)	5 × 10 ⁵ cells/vial	PD008-F
Small Intestine Epithelial Cells	5 × 10 ⁵ cells/vial	PD015-F
Esophagus Epithelial Cells	5 × 10 ⁵ cells/vial	PD016-F
Stomach Cells (uncultured)	5 × 10 ⁵ cells/vial	PD005-F
Fibroblast Cellutions Media	100 or 500ml	I-GR0-001
Epithelial Pro-conditioned Media	25, 50, or 100ml	D-PRO-001

Table 1. List of urinary tract and digestive system cellular products.



biologics

1239 Victoria St.
Costa Mesa, CA 92627

Ways To Place An Order

Contact Us

Phone 1-888-773-5959 | Fax 1-877-773-5959 | Email orders@dvbiologics.com

Ordering Hours

Monday through Friday, 9:00 am - 5:00 pm PST. Order anytime, 24 hours a day, 365 days a year by email or fax. Orders received outside of normal business hours will be processed the next business day.