

## **iLite<sup>®</sup> C5a Assay Ready Cells**

REF: BM4075

*For research use only. Not for use in diagnostic procedures.*

### **DESCRIPTION**

*iLite<sup>®</sup> C5a Assay Ready Cells* are human embryonic kidney HEK293<sup>1</sup> cells which have been genetically engineered and optimized to be responsive to human complement component 5a (C5a), resulting in a proportional expression of Firefly Luciferase. The cells also contain the Renilla luciferase (RL) internal standardization gene under the control of a constitutive promoter that renders assay results independent of cell number and provides a means for correcting for cytotoxic effects that may be encountered with some biological samples.

### **CONTENT**

>250 µL of Assay Ready Cells suspended in cryoprotective medium from Gibco (cat no 12648-010).

### **RECEIPT AND STORAGE**

Upon receipt confirm that adequate dry-ice is present, and the cells are frozen. Immediately transfer to ultra-temperature storage. Cells should be stored at least at -80 °C but preferably at lower temperature and are stable as supplied until the expiry date shown. Cells should be diluted and plated immediately after thawing.

### **BACKGROUND**

C5a is a 74 amino acid small protein fragment of complement protein 5 (C5). C5 is cleaved to C5a and C5b by C5 convertase enzymes as a result of complement activation. Factors of the coagulation and fibrinolytic pathway are also able to cleave C5 to C5a. (1) C5a is a highly potent anaphylatoxin and chemoattracting peptide, with the ability to increase blood vessel permeability, stimulation of cytokine release from myeloid cells, and expression of adhesion molecules on endothelial cells. (2)

Main pro-inflammatory effector functions are induced by C5a binding to a seven-transmembrane G-protein-coupled receptor, C5aR1 (CD88). Rapidly after cleavage of C5 into C5a and C5b, C5a is metabolized by carboxypeptidases which removes the C-terminal arginine and forms C5a-desArg, a less potent ligand of C5aR1. C5a can also bind to a second receptor, C5aR2 (C5L2 or GPR77), however the biological effects associated with C5a binding C5aR2 are less well understood, both anti-inflammatory and pro-inflammatory effects have been described in literature. The C5a receptors are expressed in a wide range of cells and tissues, and the effect of C5a activation is dependent on the location of the C5a receptors. (3, 4)

While the complement system is an important part of the innate immune defense against pathogens, research has shown that excessive complement activation including C5a-C5aR interaction plays a central role in several autoimmune and neurodegenerative disorders as well as in acute and chronic inflammatory conditions. Given the strong evidence of a pathogenic role for C5a-C5aR in many disorders both ligand and receptor are promising therapeutic targets. Clinical studies of pharmacologic candidates inhibiting C5a and C5aR1 are ongoing. (2,3,5)

<sup>1</sup> The HEK-293 cell line has been used under a license obtained from AdVec Inc.

## APPLICATION

The *iLite*<sup>®</sup> C5a Assay Ready Cells can be used for studies of C5a, receptor C5aR1 and their interaction in test samples, including human serum.

Application Notes for the following assays are available:

- Quantification of functional C5a (LABEL-DOC-0510)
- Detection of C5aR inhibitory activity (LABEL-DOC-0511)

## REFERENCES

1. Manthey et al. Complement Component 5a (C5a). *Int J Biochem Cell Biol.* 2009 Nov;41(11):2114-7.
2. Woodruff et al. Inhibiting the C5–C5a receptor axis. *Mol Immunol.* 2011 Aug;48(14):1631-42.
3. P N Monk et al. Function, Structure and Therapeutic Potential of Complement C5a Receptors. *Br J Pharmacol* 2007 Oct;152(4):429-48.
4. Colley et al. Structure and characterization of a high affinity C5a monoclonal antibody that blocks binding to C5aR1 and C5aR2 receptors. *MAbs.* 2018 Jan;10(1):104-117.
5. Hawksworth et al. New concepts on the therapeutic control of complement anaphylatoxin receptors. *Mol Immunol.* 2017 Sept;89:36-43.

## SYMBOLS ON LABEL

	Lot number		Temperature limitation
	Catalogue number		Biological risk
	Use by		Manufacturer

## PRECAUTIONS

For research use only. This product is intended for professional laboratory research use only. The data and results originating from using the product should not be used either in diagnostic procedures or in human therapeutic applications.

*iLite*<sup>®</sup> C5a Assay Ready Cells are a stably transfected cell line of human origin classified as a Class 1 Genetically Modified Microorganism. *iLite*<sup>®</sup> Assay Ready Cells should be handled in accordance with EU directive (2009/41/EC) and disposed of in a licensed contained-use facility in accordance with these regulations. When used in accordance with the manufacturer's product specification, the requirements of EC Directive 2009/41/EC on the contained-use of genetically modified microorganisms are deemed to have been met.

Residues of chemicals and preparations generally considered as biohazardous waste should be inactivated prior to disposal by autoclaving or using bleach. All such materials should be disposed of in accordance with established safety procedures.

## PROPRIETARY INFORMATION

In accepting delivery of *iLite*<sup>®</sup> Assay Ready Cells the recipient agrees not to sub-culture these cells, attempt to sub-culture them or to give them to a third party, and only to use them directly in assays. *iLite*<sup>®</sup> cell-based products are covered by patents which is the property of Svar Life Science AB and any attempt to reproduce the delivered *iLite*<sup>®</sup> Assay Ready Cells is an infringement of these patents.