



emulate

Protocol for Emulate Organ-Chips:  
Glucose Quantification Assay

August 26, 2019

EP130 v1.0

TITLE Glucose Quantification Assay	DOCUMENT EP130	VERSION 1.0
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Goals:	Key Steps:	Required Materials:
Quantify glucose from Organ-Chip effluent	<ul style="list-style-type: none"> <li>• Prepare reagents, samples, and standards</li> <li>• Run assay</li> <li>• Read plate(s)</li> </ul>	<ul style="list-style-type: none"> <li>• Glucose Assay Kit (Abcam #: AB65333)</li> <li>• Plate reader</li> </ul>

## Introduction

This assay provides a simple and sensitive method to quantify glucose levels from Organ-Chip effluent samples.

## Method

Sample type	Organ-Chip effluent See Protocol EP124 Effluent Sampling.
Recommended assay flow rate (Liver-Chip)	30 $\mu$ L / h
Recommended effluent dilution (Liver-Chip)	1:5 Note: Glucose levels will change depending on medium used, cell injury status, or based on donor-to-donor variability. Therefore, sample dilutions may need to be further modified to accommodate different experimental conditions.
Run assay as described on supplier site	<a href="https://www.abcam.com/glucose-assay-kit-ab65333.html">https://www.abcam.com/glucose-assay-kit-ab65333.html</a> Note: Store kit protected from light at -20°C immediately upon receipt.
Sample concentration range (Liver-Chip)	50 mg / dL to 200 mg / dL
Sample quantification (recommended)	$GLC_{net} = GLC_{effluent} - GLC_{treatment\ media}$ GLC <sub>net</sub> = net glucose ( $\mu$ g / mL) GLC <sub>effluent</sub> = glucose from effluent GLC <sub>treatment media</sub> = glucose from treatment media
Alternative glucose measurement method (optional)	Real-time glucose reading of Liver-Chip effluent samples can also be achieved using a portable glucose meter (BioReactor Sciences, BRS GM100). In this case, 5 $\mu$ L of samples can be loaded neat with no dilution into the glucose meter as described on the supplier site:  <a href="https://www.bioreactorsciences.com/brs-gm-100-glucose-meter.html">https://www.bioreactorsciences.com/brs-gm-100-glucose-meter.html</a>

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