ROY J. CARVER CENTER FOR GENOMICS

"ACCELERATING GENOMICS RESEARCH"

Newsletter: Volume 1- June 2023

RECENT NEWS:

The CCG has been awarded funds from the Roy J. Carver Charitable Trust to acquire new equipment to support the Department's research efforts. We will be adding the following new equipment to the CCG in the next few months:

Diagenode Bioruptor Pico II (Now Available!!!)

BD FACS Melody Cell Sorter

Bio Tek Synergy LX Multimode Plate Reader (Now Available!!!)

Bio Tek Synergy LX plate reader

CCG UPDATES

This is our second newsletter highlighting the newest equipment addition to the CCG: BioTek Plate Reader. If you have any questions and would like to be added to our listserv for future newsletters, email the CCG (ccg@uiowa.edu).

Updating equipment:

Plate Reader: The **NEW** Bio Tek Synergy LX Multimode Plate Reader has come in and is set up in the CCG! You are welcome to start using it! Yippie! This instrument is replacing the old Spectramax M2 plate reader. (See Highlight below for more details.)

NanoDrop One: A recent computer hardware update is finally complete. Now, you can log into the computer with your HawkID and run the NanoDrop via the desktop software. You can also export your data to your email. The system is much faster and the NanoDrop software has been updated as well. Please continue to sign the use/log sheet when using this machine regardless if you log into the computer. If you are experiencing any problems, email the CCG (ccg@uiowa.edu).

New Equipment Highlighted:

Bio Tek Synergy LX Multimode Plate Reader is a microplate reader that does continuous UV-Vis absorbance measurements with wavelength range from 200-999nm in 1nm increments, allowing it to be used for numerous colorimetric and UV applications including nucleic acid and protein quantification, turbidity measurements, BCA and Bradford assays, cell viability assays, ELISA, and more. In addition to the absorbance measurements, this machine has the capability to do fluorescence and luminescence measurements extending its use to fluorescence ELISA assays, gene expression analysis such as determining transfection efficiency of GFP-reporter genes or luciferase-based assays, cell viability assays with luminescence ATP, and other fluorescence-based assays.

The Synergy LX reader has 4 filter cubes with dichroic mirrors that can be easily swapped in and out of the system: 1) luminescence cube, 2) blue fluorescence cube with 360/40nm excitation filter, 460/40nm emission filter, and 400nm cut off dichroic mirror, 3) green fluorescence cube with 485/20nm excitation filter, a 528/20nm emission filter, and 510nm cut off dichroic mirror, and 4) red fluorescence cube with 530/25 excitation filter, 590/35nm emission filter, and 570nm cut off dichroic mirror. The Synergy LX reader can use 6- to 384-well plates and Take3 plates for microvolume analysis (16- 2ul samples). Lastly, the machine runs on the same software (Gen5) as the Cytation5.

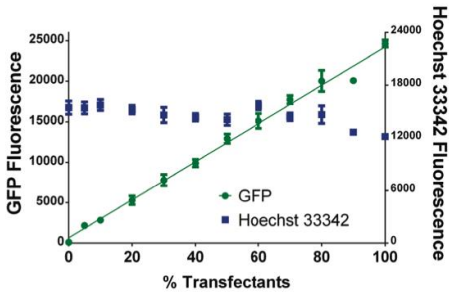

Figure 1. Comparison of GFP and Hoechst 33342 fluorescence in HEK293 cells. Mixtures of increasing percentages of HEK293-GFP cells along with nonfluorescent HEK293 cells were seeded such that a total of 50,000 cells were in each well. After staining live cells with Hoechst 33342 dye, the blue and green fluorescence was measured using an Agilent BioTek Synergy LX multimode reader and plotted. Data points represent the mean and standar deviation of eight determinations.

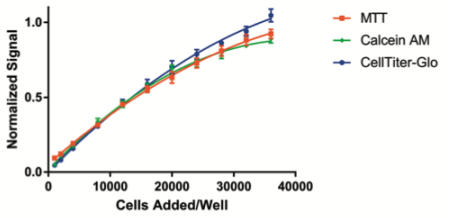

Figure 1. Cell titration curves for colorimetric MTT, fluorometric Calcein AM and luminescent CellTiter-Glo. All data were normalized to the maximum signal for each detection technology. Each data point represents an average of eight replicates.

Additional info (see application notes):
https://www.agilent.com/en/product/microplate-instrumentation/microplate-readers/multimode-microplate-readers/biotek-synergy-lx-multimode-reader-1623209#literature

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Important Use Information:

- Synergy LX Plate Reader is to be used for common microplate applications that do not require imaging. This machine was purchased in order to take the high usage load off the Cytation5 machine. If you require more advanced applications or imaging, please schedule time on the Cytation5.
- Schedule time online for 30 min blocks on the biology service center page (link below). If you are a new user, email the CCG (ccg@uiowa.edu) to set up an account and gain access to scheduling system and CCG facility.

CCG Scheduling System:
https://bioweb.biology.uiowa.edu/servicecenters/login.php

- You are required to log your use on the sign-in sheet next to the machine in addition to reserving time online.
- Please see Christine before first use of the machine to get a quick overview.
- The machine takes a couple of minutes to warm up once turned on. You need to log into the computer with your HawkID to run the system.
- On the desktop is a tutorial (please check it out before first use) and software to run the machine. The blue lighted button on the front of the machine opens/closes the plate tray.
- On the front above the plate tray is a lift-up panel, inside is a space to swap in and out the filter cubes. The filter cubes are in the labeled drawer.
- Please wear gloves and be careful when handling the filter cubes and replace them back in their plastic sleeves in their corresponding trays when finished using the machine. Each cube has a "knob" for safe handling and insertion into the reader. If you have any questions, please ask Christine before handling them.
- Cubes are inserted with the label on the "knob" facing up, so you can easily read it. If the writing is upside down, the cube is inserted incorrectly and upside down.
- If you require the Take3 plates, please let Christine know so we can get it from the Cytation5 supplies.
- The website link (on the left) has additional info with experimental applications including DNA and RNA quantifications, cell viability assays using absorbance, luminescence, and fluorescence, and more. A great reference!
- Please transfer your data via the network (email or to your RDSS drive) and not onto a USB drive.

Billing Information:

- You are required to log your number of plates you run for each use of the machine on the sign-in sheet.
- You will be billed monthly based on the number of plates analyzed/run per month. Cost: $10 per plate run.

Next Month's Equipment Highlight: BD FACSMelody 4-way Cell Sorter