

The In-Line Adaptor accessory P/N 2820-530 for C-FLUOR probes can be used to help users monitor algal growth in test tubes without affecting algal cultures. This demonstration shows how these tools and accessories are effective for growth monitoring.

In November 2019, multiple algal cultures were diluted to within a concentration range of 0.08 – 0.26 µg/L chlorophyll content. One hundred and fifty milliliters of each culture were evenly distributed into three 25 mm diameter glass test tubes (50 milliliters per test tube per culture) and placed in a room temp environment near a window for exposure to natural light - see Figure 1.

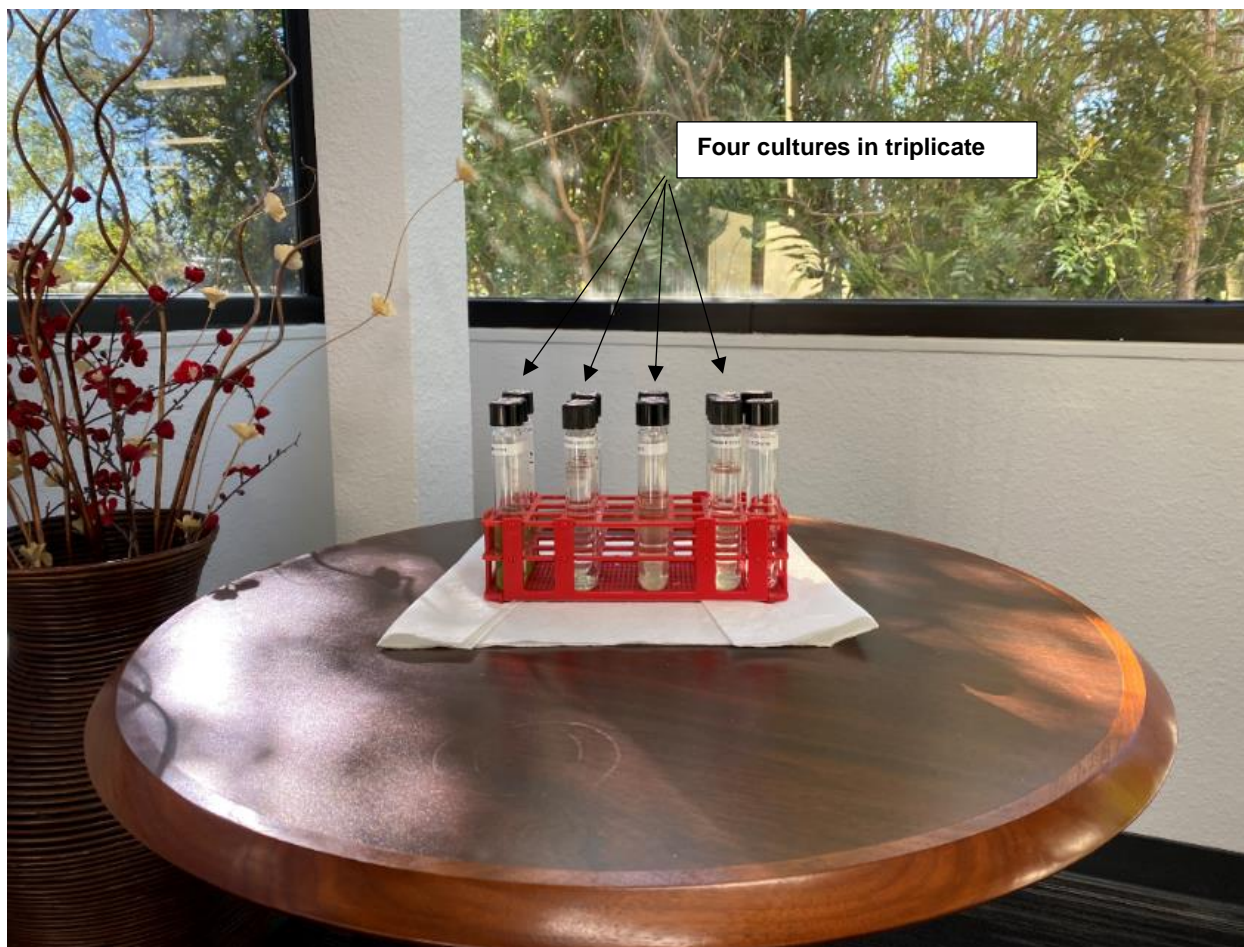


Figure 1. Four cultures with triplicate test tubes per culture and two blank test tubes

Growth was monitored using Turner Designs C-FLUOR Chlorophyll Probe with our C-FLUOR In-Line Adaptor. Daily measurements were made by inserting each test tube into the adaptor, butting the C-FLUOR Probe's optical head to the test tube wall, and recording the fluorescence as voltage response - see Figure 2. After recording the fluorescence, the test tubes were returned to their original location near the window for continued natural light exposure. These measurements were repeated until each C-FLUOR Probe's response saturated at 5 volts.

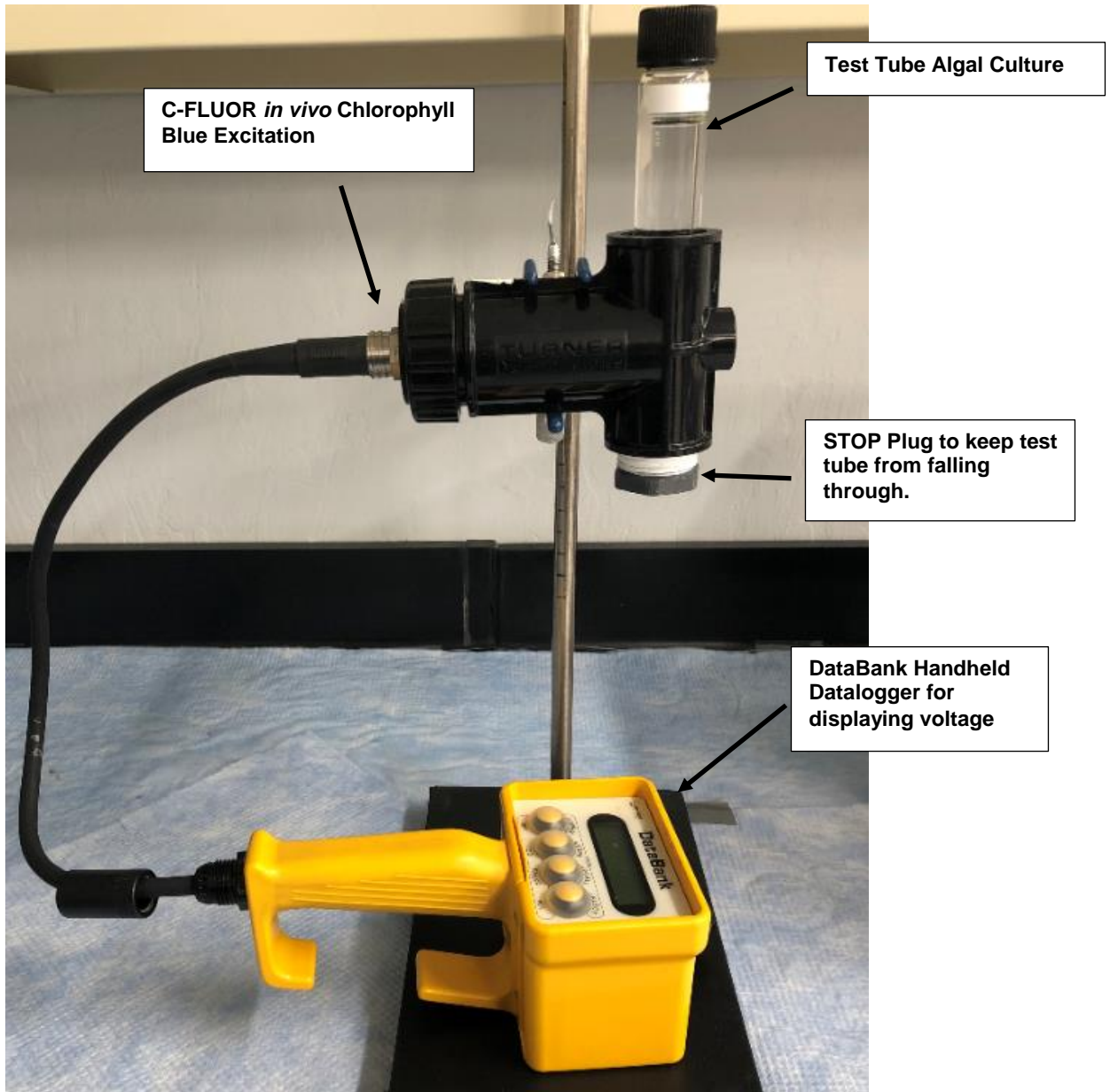


Figure 2. C-FLUOR Probe with In-Line Adaptor and Databank Handheld data logger

C-FLUOR Probes output a voltage response proportional to the fluorescence detected. The voltage scale output is 0 – 5 volts which can be read by any data logger that accepts a voltage signal. The C-FLUOR *in vivo* Chlorophyll Blue Excitation probe was used to measure algal test tube cultures for this growth monitoring project. Turner Designs Databank Handheld Data Logger was used to display voltage. Maximum concentrations detected ranged from 90 to 183  $\mu\text{g/L}$  and are plotted for five of the twelve cultures monitored – see Figure 3.

**Note:** *These five cultures were either very close to or passed the 5 volt saturation point at the end of the study.*

### Algal Growth Monitoring Using C-FLUOR with In-Line Adaptor

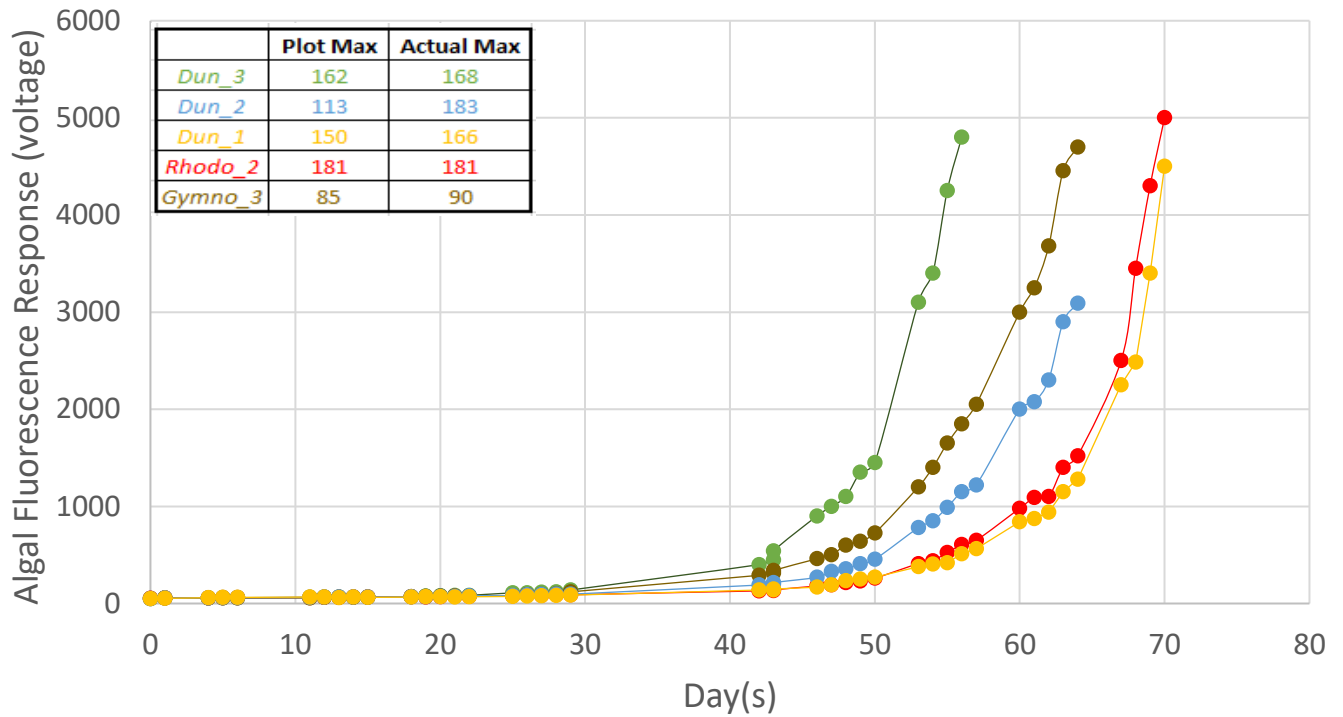


Figure 3. Growth chart for five test tube cultures. Plot Max refers to the maximum concentration plotted for each culture. Actual Max refers to the expected concentration at the 5 Volt level based on the correlation between the Plot Max and Extracted Chlorophyll Concentrations.