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CalculatingGenerationTime

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[1]In-house protocol

1 Works for me This protocol is published without a DOI.

Eadewunm

ABSTRACT

Calculation of generation times (doubling times)

PROTOCOL CITATION

Elizabeth Fozo 2020. CalculatingGenerationTime. **protocols.io** https://protocols.io/view/calculatinggenerationtime-bq2fmybn

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ABSTRACT

Calculation of generation times (doubling times)

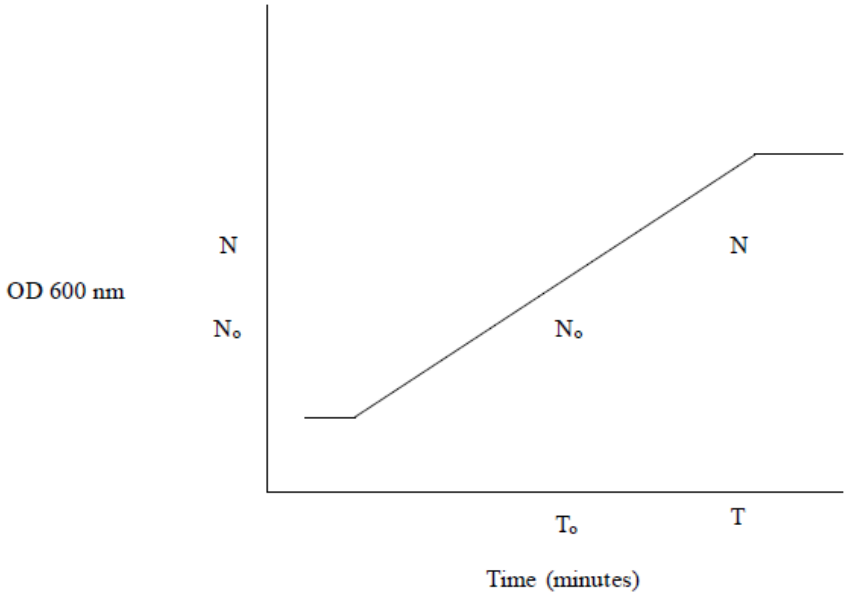
Steps

1 Grow ON of strain of interest in appropriate media

2 In the morning, check the culture(s) under the scope to verify pure culture. Dilute the ON into the appropriate media.

3 At hourly intervals, record OD 600 nm. Make sure you record the time in minutes! For example, 2 hours is 120 minutes; 3 hours and 30 minutes is 210 minutes, etc.

4 Plot your OD 600 versus time so that you know that you are in EXPONENTIAL PHASE to calculate GENERATION TIMES



5 In order to calculate the generation/doubling time, calculate the log of the OD 600 values you have obtained. This will give you negative numbers unless the OD 600 value is above 1.0 (which in that case you are likely NOT in exponential phase).

6 Calculate the slope (K) of the line by selecting points in mid to late exponential phase. From the example above:
Slope = $(N - N_0)/(T - T_0) = K$ (slope is called K in theses calculations)

7 Calculate the generation time using the following formula:
$t_g = 0.3 / K$ = minutes to double
N.B 0.3 is a constant

8 Here are some values as an example:

Time (minutes)	OD 600	log OD 600
180 (To)	0.3576 (No)	-0.447
291 (T)	0.9525 (N)	-0.021

Slope (K) = $(N - N_0) / (T - T_0)$ = ((-0.021) - (-0.447))/ (291-180) = 0.0038

$t_g = 0.3 / K = 0.3 /0.0038$
t_g = 78.3 minute