Use the circuits to gain a more thorough knowledge of mammalian system one will function in a plant system and the other in a

Objectives

that will help to better characterize the consequences of oxygen levels (less than 5% oxygen) have arisen during tumor development. The believed that these areas may initiate hypoxia-driven very prevalent in densely populated regions of tumors. It is alcohol fermentation will lead to the accumulation of lactic and then alcohol fermentation in order to sustain levels of oxygen will have to switch from aerobic respiration provide a niche for novel technologies to be put into place

Abstract

Development of Eukaryotic Hypoxia Sensing Devices

Materials and Methods

Mammalian Cell Line

Wild-type Arabidopsis Thaliana, cells by Purdue Horticulture Department

GBAM1: Primary Glioblastoma CD133+, cells were provided by Dr. P Tofilon

Culture Conditions

37° C, normoxia (21% O2) 24° C, hypoxia (<1% O2)

Materials

D-MEM/F12, B-27 Supplement

LB Agar

and EGF

Methods

Differential localization of GFP-ATM1(IQ-tail) in root which explains the use of the restriction enzymes PstI, SpeI, XbaI, and EcoR1

Key

A = A. Thaliana

G = Glioblastoma

L=maximum (limit)

k

Parameters:

G = Glioblastoma Growth Rate

L=maximum (limit)

k

Variables:

k

Oxygen Level (Fractional Values)

A. Thaliana Growth Rate

CMV Promoter 413...988

392 PstI (1)

406 SpeI (1)

Reported (GFP) 1158...1870

XbaI (1)

EcoRI (1)

Mammalian Promoter

CMV- Cytomegalovirus

-derived from HCMV

-constitutively active

ODD- Oxygen Degradation Dependent domain

-derived from HIF-1α

-causes the circuit to decay if in normoxic conditions (21% O2)

AmpR- Ampicillin Resistant

The circuits were made to fit the biobrick standard, which explains the use of the restriction enzymes PstI, SpeI, XbaI, and EcoR1

Future Experiments

The next set of experiments will focus on the transformed plants, transfected with firefly luciferase and others will be implemented into the system. Then, using the circuits will be tested for their effectiveness. An incubator with oxygen control, the transformed plants and transfected firefly luciferase and others will be implemented into the system. Then, using

These promoters have the potential for other applications regarding hypoxic expression will be measured. The circuits will be tested for their effectiveness.

Acknowledgments

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