

Public Abstract

First Name:Daniel

Middle Name:Milang

Last Name:Mubima

Adviser's First Name:Timothy

Adviser's Last Name:Glass

Co-Adviser's First Name:

Co-Adviser's Last Name:

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Title:Development of a pH sensitive coumarin based chemosensor

Catecholamines, including dopamine are an important class of neurotransmitters that are involved in a variety of central nervous system functions. Malfunction of dopamine responsive neurons has been implicated in a number of disease states including Parkinsons disease, sparking the development of diagnostic systems.

Fluorescent probes have found several uses in monitoring the physiological state of cells. Earlier, a fluorescent sensor capable of binding norepinephrine in chromaffin cell vesicles was developed. This sensor is based on coumarin aldehyde compounds which have been shown to reversibly bind primary amines such as those found in neurotransmitters. We herein propose a pH sensitive sensor is that remains off upon binding to the neurotransmitter in the vesicle (pH=5.5). When the cell is stimulated and the neurotransmitters released into the synapse (pH=7.4) the sensor will fluoresce.