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1 import numpy as np
2 from scipy.integrate import odeint
3 from scipy.optimize import curve_fit
4 from scipy.optimize import differential_evolution
5 import matplotlib.pyplot as plt
6 from matplotlib.backends.backend_pdf import PdfPages
7 import pandas as pd
8
9 t = np.linspace(0,34800, num=6961)
10 rawdata =
11 np.transpose(np.delete(np.genfromtxt('hir3long_ononly.csv',delimiter=','),0,0))
12 newdata = list(rawdata.flatten())
13 #new = newdata[0:24480:240]
14 lightdata = np.transpose(np.delete(np.genfromtxt('longlight_ononly.csv',
15 delimiter=','),0,0))
16
17 def sqres(ptuple):
18     return np.sum((np.asarray(newdata)-func(t,*ptuple))**2)
19
20 #def func(t,d1,k1,Kd,n,d2,k2,k3):
21 def func(t,d2,k2,k3):
22     inivalues = [1,0,0,0,0,0,0]
23     arrayvalues = np.asarray([])
24
25     for i in range(len(lightdata[:,0])):
26         def I(t):
27             tindex = t/5
28             if tindex > 6960:
29                 tindex = 6960
30             return lightdata[i][int(tindex)]
31
32     #def odes(z,t,d1,k1,Kd,n,d2,k2,k3):
33     def odes(z,t,d1,k1,k3):
34         Pu,Pb,Pa,mRNA,mCherry1,mCherry2,mCherry3 = z
35         d1 = 0.019905
36         k1 = 0.08299
37         Kd = 90.41
38         n = 0.964487
39         #d2= 486.67
40         #k2= 6.597
41         #k3= 0.0539
42
43         d3 = 0.000077
44         k4 = 1.25
45         i1 = 0.000001

```