

```
% parameters
m1=0.54; m2=0.24; m3=0.2; m4=0.2; m5=0.3; m6=0.1; m7=0.1; m8=0.5; m9=0.2;
m10=0.1; m11=1; m12=1; m13=0.32; m14=0.4; m15=0.7;
m16=0.5; m17=0.5; m18=3.4; m19=0.9; m20=0.6; m21=0.08; m22=0.1; m23=0.1;
m24=0.1; m25=0.9; m26=0.5; m27=0.1; m28=28;
m29=0.3; m30=1; m31=0.1; m32=0.2; m33=13; m34=0.6; m35=0.3; m36=0.3;
m37=0.4; m38=0.3; m39=0.2;

n1=2.6; n2=0.35; n3=0.29; n4=0.04; n5=0.4; n6=20; n7=0.1; n8=0.5; n9=0.6;
n10=0.3; n11=0.6; n12=9; n13=2;
n14=0.1; n15=2; n16=0.1; n17=0.5; n18=0.5; n19=0.2;

p1=0.13; p2=0.27; p3=0.1; p4=0.5; p5=1; p6=0.2; p7=0.3; p8=0.6; p9=0.8;
p10=0.54; p11=0.5; p12=10; p13=0.1; p14=0.14; p15=2; p16=0.62;
p17=17; p18=4; p19=1; p20=0.1; p21=1; p22=0.5; p23=0.37; p24=11; p25=2;
p26=0.3; p27=0.8; p28=2; p29=0.1; p30=0.9; p31=0.1; p32=0.1; p33=0.2;

g1=0.1; g2=0.01; g3=0.6; g4=0.005; g5=0.2; g6=0.3; g7=1; g8=0.04; g9=0.3;
g10=0.5; g11=0.7; g12=0.1; g13=1; g14=0.02; g15=0.4; g16=0.3;
g17=0.6; g18=0.4; g19=0.4; g20=0.03; g21=0.4; g22=0.1; g23=0.4; g24=0.3;
g25=0.4; g26=0.3; g27=0.2; g28=0.1; g29=1;
a=2; b=2; c=2; d=2; e=2; ff=2; g=2; h=2; i=2; j=2;
q1=1; q2=1.56; q3=3; Loffset=0; Lamplitude=1; A0=1;

Vphdat=0.4*3600; Vmfbpases=0.85*3600; Kmfbpase=0.033; KiF6Pfbpase=0.7;
Vmagpase=0.24*3600; KmagpG1P=0.08; KmagpATP=0.08; KagpPGA=0.1;
ATPs=0.71; ADPs=0.23; ATPc=2.57; ADPc=0.3; NADP=0.29; NADPH=0.21; Pc=3;
PPic=0.04; Ptots=10;
KmATPsynth=0.3; KeqPGI=2.3; KeqPGM=0.058; KeqAld=7.1; KeqIso=22;
KeqPGAGAP=0.009;
KtptDHAP=0.077; KtptPi=0.63; KtptPGA=0.25; VmTPT=1.1*3600; KmTHP=0.08;
KmHP=0.04;

st0=0.01; f=0.582; fM=0.87; fG3=0.13; KMb=1.46; KMisa=1.46; KMr=12;
Kisa0=1.58; Kbg=1.25; KMbg=4.27;
Kdpeeq=1; vc=23; vs=65; Kmex=5.96; KMmex=4; KMglut=19.3; KMhvk=0.035;
KMF6P=2; KMUDPG=2; Vmpgm=1.8*3600; Vmpgi=0.7*3600; KMG6P=6;
Vmugpase=3.6*3600; UTPc=1.9; KeqUGPase=0.31; KmUTP=0.093;
Vmdpe1=0.1*3600; Vmdpe2=0.1*3600; Vmhvk=0.1*3600; Vmisa=0.005*3600;
Vmb=0.09*3600; VmPFP=0.1*3600; KmF26PK=0.5; KmF26PP=0.032;
K_F26PK=0.00002*3600; K_F26PP=0.001*3600; VmGPT=0.0004*3600;
Vmresp=0.1*3600; Vmexp=0.004*3600; Vmfbpasec=0.2*3600;
KiF6P_F26P=0.1; Kmfbpasec=0.0025; KmTHPc=0.13; KiG6P=4;
Vmmex=0.1*3600; Vmglut=0.02*3600; KmSP=0.6; KeqPFP=3.3; KiPGA=0.084;
KiF26P=0.002; kd_int=0.003*3600;
KeqSuSy=0.15; KmSuSy=17; UDP=1.3; Vmsps=0.3*3600; Vso=3/4; Ki_cons=0.3;
VmSuSy=0.6*3600;
Vmcons=0.6*3600; Vm_St_sink=0.005*3600; Vso=3/4;

VmGPT2=0.08*3600; KmGPT2=1; ksGPT=4; kdGPT=0.3; KsGPT=1.5;
Ksb1=0.4; Ksb2=0.2; ksb1=0.02; ksb2=0.06; kdb=0.5; kdX=1; ksX=0.0023;
ksa1=0.012; ksa2=0.02; ksa3=0.23; Ksa1=0.2; kdai=0.07; kdal=0.03;
ksA=0.0004; kdA=0.1; kdi=0.2; ksi=0.6; Ki_si=1;
kidiurn=0.3; Kdiurn0=0.3;

dawn1=0;
dusk1=2;
dawn2=7;
```

```

dusk2=12;

%ksa1=0.07; % no loop to st degr
%ksX=ksX*0.4; % sex mutant

period=24;
dawn=0;
dusk=12;
dusks=dusk;
dawns=dawn;
day_numb=3;

%dusks=6;
%dawns=4;

% y(1) LHY mRNA
% y(2) P
% y(3) GI-ZTL
% y(4) GI-ELF3 cytoplasm
% y(5) LHY prot
% y(6) TOC1 mRNA
% y(7) PRR9 prot
% y(8) PRR5 (NI) mRNA
% y(9) PRR5 (NI) prot
% y(10) GI prot cytoplasm
% y(11) TOC1 prot
% y(12) ZTL
% y(13) EC
% y(14) GI mRNA
% y(15) PRR9 mRNA
% y(16) PRR7 mRNA
% y(17) PRR7 prot
% y(18) ELF4 mRNA
% y(19) ELF4 prot
% y(20) LHY prot modif.
% y(21) ABAR mRNA
% y(22) COP1 cytoplasm
% y(23) ELF3 mRNA
% y(24) ELF3 cytoplasm
% y(25) ELF3 nuclear
% y(26) COP1 nuclear night
% y(27) COP1 nuclear day
% y(28) LUX mRNA
% y(29) LUX prot
% y(30) ABAR prot
% y(31) SnRK2 prot
% y(32) X
% y(33) alfa
% y(34) I
% y(35) betta
% y(36) GPT2
% y(37) St_isa_int (integral amount of starch linkage groups released by
ISA in dark)
% y(38) St_bam_int (integral amount of starch degraded by b amylase)
% y(39) F26P
% y(40)-G2 cytosol
% y(41)-G cytosol
% y(42)-sucrose cytosol

```

```
% y(43)-THP stroma
% y(44)-HP stroma
% y(45)-Pi stroma
% y(46)-G1P cytosol
% y(47)-G6P cytosol
% y(48)-F6P cytosol
% y(49)-UDPG cytosol
% y(50)-THP cytosol
% y(51)- starch
% y(52)- GN - starch linkage groups
% y(53)- G2 maltose stroma
% y(54)- G3 stroma
% y(55)- G stroma
% y(56)- G5 stroma
% y(57)- HP sink
% y(58)- sucrose sink
% y(59)- D
```

```
%Solving the ODEs and draw traectories
```

```
y0=[0.872716371818482,0.824989398281651,0.0914481482635263,0.026570469762
7721,0.416699255702025,0.05961314440069022,0.0785361980055857,0.0911573295
747315,0.0815234789277476,0.0198011388294716,0.0848507432019182,0.2446799
93207824,0.131356261054016,0.282909537926847,0.354496544871908,0.13766369
7236912,0.0820085112960155,0.304172208897905,0.470522910992228,0.05756908
64999803,0.802936038384632,1.27736959726019,0.352370310361031,0.170317790
937354,0.257017700710044,0.0831142338448009,0.785452700509197,0.117573375
865914,0.614449151198399,0.446321166494374,0.212646754568365,0.7744808525
38354,0.0623956124065526,0.586402409990238,0.456143197371665,0.0152197707
078998,27.4055787023648,87.6266783097475,0.0160082956913131,0.05659665011
99621,0.0195030282002148,33.5637317635149,0.853646482425089,0.60430964807
4562,2.46344224570645,0.470241352652731,8.12435064372423,3.57804787908215
,6.76313268654092,0.996284153900678,8.53250397297930,0.116959205153195,0.
790669719365539,1.53952419748888,5.19967866749756,0.248195041625546,1.334
64560671985,18.7061615530757,2.55295369548400,0,0,0];
```

```
%
```

```
y0=[0.779054853619505,0.845762379574253,0.0174517207380325,0.026517794596
2292,0.381411320013981,0.0583317241801026,0.0836882347070533,0.0993810838
302940,0.0955363441055382,0.0219682089311870,0.0818423040060449,0.2285128
83971854,0.122277746865499,0.313569127011085,0.365931285630753,0.14065743
2768511,0.0908227616770410,0.365802147707535,0.619996130879163,0.05596144
08650907,0.839868098865727,1.28937679806413,0.360154448384402,0.163076057
073505,0.191800440793121,0.0833673373901626,0.861736343988859,0.143750804
799760,0.720852327979776,0.360800375037147,0.277223028221521,0.4279227139
89633,0.0660593345305043,0.954304798797522,0.905974420527082,0.0941063998
738604,23.0417826956020,77.9939566976469,0.0184019240513053,0.03669571944
43314,0.0100891768840015,32.8451902932457,0.786344893819705,1.47657122992
318,1.95780120132358,0.450561150375968,7.77908401003078,3.46080301953562,
6.53006650954390,1.13565879672582,24.9241851375528,0.0721483823578732,0.4
93786661063979,0.965560084751943,2.82790519977246,0.175769611794423,1.535
48407808401,24.4190864524366,1.04961923451044,0,0,0]; % 6:18
```

```
%
```

```
y0=[0.776410146751633,0.699353483630706,0.333876049251788,0.0430190670291
926,0.338947477650079,0.101048295121987,0.0722576409510301,0.051110343531
8198,0.0553909468875874,0.0234213803902502,0.122716881276968,0.2829076444
75292,0.127140940616717,0.299027750091585,0.284664320027607,0.06487572442
88751,0.0386285891735933,0.411826315455928,0.746498223814527,0.0406957506
```

228821,0.638407734946975,1.20519273712288,0.409522319136779,0.17119992752
4552,0.163798704383440,0.0949725470685363,0.572136692636309,0.17025813337
6067,0.988569551856115,0.557905569956963,0.174447964308422,0.984498735187
221,0.0701731978233135,0.277891755110148,0.223059987395705,0.000920671911
209852,17.6997291825963,56.4562773269530,0.00390514171508337,0.1255691301
59891,0.0448045444559551,42.2628168803337,0.946206619728036,0.19178815639
8962,3.31259098100083,0.304457554838862,5.27673797181260,2.33295050060394
,4.19632595634004,0.812716331195791,188.670064588566,0.621890502874490,2.
44462117347029,6.94262401807701,9.86117914868789,2.70612509727144,1.07161
987332350,12.6728416762239,4.84446700640827,0,0;]; % 18:6

%

y0=[0,0.824994810751022,0.0794097905502483,0.0382341377467878,0,0.0418635
854343641,0.0715917983127863,0.00145215088487726,0.00460750540880659,0.02
22459867600277,0.0478800581869937,0.241540244980208,0.154885881983818,0.3
88870572068961,0.354879057926924,0.00433187489641724,0.00659736848052304,
0.436188122918216,0.403390437939639,0,0,1.27758785057443,0.58000000000000
0,0.253149324911197,0.431515765092759,0.0830473832987224,0.78418534300399
0,0.160849896559547,0.465407544302679,1,0.100000000000000,0.6723645492355
09,0.0418850816789347,0.429472838248816,0.234748944954003,0.0127864211119
137,22.6081131373618,73.2693439436886,0.0182841318060556,0.01635584350429
09,0.00692349371303618,18.4643362592107,0.846547946570249,0.7286755904516
01,2.34634297790009,0.566487962055891,9.78257359511979,4.30444386114337,8
.21416908349641,1.04177365422730,1.35353118284519,0.0309982616354536,0.19
0053776035529,0.493988985079067,3.06672360394112,0.0424267252455299,0.878
585423087745,8.21959549705729,1.60384546006348,0,0;]; % lhy/ccal

%

y0=[0.313835245416090,0.778783145971261,0.159925194260482,0.0626795735547
243,0.158948697191015,0.175009287763682,0.0959800867313777,0.133441614583
410,0.181537087246948,0.0555124260968692,0.191220077027471,0.239009168893
895,0.0561135138282149,0.643408328328649,0.288278490017929,0.052205539760
2181,0.0731181262766846,0.921469378435977,1.39673458902745,0.043710955632
6952,0.557644278234390,1.25132985845240,0.476446615823211,0.1286902401636
03,0.0449799389816246,0.0860247771051346,0.683806479818022,0.455339428841
949,1.88899338366563,0.337150647562679,0.339064183321757,0.73374377630088
8,0.127833479722820,0.565754034136414,0.412925999498021,0.015818630164032
1,18.6253556393918,62.9378278431157,0.0174283823477892,0.0941482994338694
,0.0456511351384125,37.0500888078375,0.846369329231552,0.698022118994226,
2.37752277626030,0.515391500200273,8.90230029003806,3.90817068383101,7.41
405906664120,1.02509811069390,216.067114307015,0.220492633114529,1.390314
01388341,3.62389987641237,7.89653405281702,0.915775267147732,1.4019176449
6793,20.6421909306767,2.65188113542613,0.0348623314968743,0.0323091497157
647;]; % T=17

%

y0=[0.791467958066730,0.836208012299859,0.0743756799105091,0.015441683628
1041,0.676062594728742,0.0265922925743891,0.0979652538664430,0.3798433366
77848,0.225021079556636,0.0214468904039956,0.0384215069475682,0.241191064
479121,0.0717498687189291,0.258201103392475,0.391211410761490,0.540691059
647969,0.410106416468864,0.166004868067769,0.232413304860947,0.1561906383
67148,1.08965740686632,1.28378608989550,0.151557003766498,0.0869480842315
483,0.253857976557821,0.0829941643085208,0.820679230898679,0.065557296508
0668,0.292378372093669,0.346813185984053,0.239411088576304,1.203585939274
61,0.0618972195683373,0.825448184601290,0.618995623793950,0.0504413268654
962,42.2943184622260,118.181758590230,0.0103661486058586,0.01944830729104
50,0.00429308480263866,26.4696108436147,0.830194336998487,0.6905945609237
97,2.42331416839325,0.393257804775143,6.79508023310913,3.03238412929452,5
.66553657396697,0.970235682139680,1.15231017065527,0.0458058664672865,0.2

```
55779842609295,0.210741338617800,1.35320324681454,0.0163408604419978,1.29
064642024528,17.3324723736508,2.54174568323780,0,0;]; % T=28
```

```
if (y0(43)+y0(44)+y0(45))>Ptots
    figure (99);
    title({'wrong initial conditions'});
    hold on;
end

options=odeset();
t=[0 period*day_num];
[T, Y] =
ode23s(@Model_st_P2013,t,y0,options,q1,q2,q3,p1,p2,p3,p4,p5,p6,p7,p8,p9,p
10,p11,p12,p13,p14,p15,p16,p17,p18,p19,p20,p21,p22,p23,p24,p25,p26,p27,p2
8,p29,p30,p31,p32,p33,m1,m2,m3,m4,m5,m6,m7,m8,m9,m10,m11,m12,m13,m14,m15,
m16,m17,m18,m19,m20,m21,m22,m23,m24,m25,m26,m27,m28,m29,m30,m31,m32,m33,m
34,m35,m36,m37,m38,m39,n1,n2,n3,n4,n5,n6,n7,n8,n9,n10,n11,n12,n13,n14,n15
,n16,n17,g1,g2,g3,g4,g5,g6,g7,g8,g9,g10,g11,g12,g13,g14,g15,g16,g17,g18,g
19,g20,g21,g22,g23,g24,g25,g26,g27,g28,g29,a,b,c,d,e,ff,g,h,j,dusk,dawn,d
awn1,dusk1,dawn2,dusk2,period,Loffset,Lamplitude,A0,st0,f,fM,FG3,KMb,KMis
a,KMr,Kbg,KMbg,vc,vs,KMmex,KMglut,KMhxx,Vmb,Vmisa,Vmdpe1,Vmdpe2,Vmmex,Vmg
lut,Vmhxx,Vphdat,ATPs,ADPs,ATPc,ADPc,NADP,NADPH,Pc,PPic,Ptots,KeqPFP,Vmfb
pases,Kmfbpase,KiF6Pfbpase,Vmagpase,KmagpG1P,KmagpATP,KagpPGA,KmATPsynth,K
mHP,KmTHP,KmSP,KeqPGI,KeqPGM,KeqAld,KeqIso,KeqPGAGAP,VmTPT,Vmsps,KMF6P,KM
UDPG,KiG6P,Vmpgm,Vmpgi,Vmugpase,UTPc,KeqUGPase,KmUTP,Vmresp,KmTHPc,Vmexp,
Vmfbpasec,Kmfbpasec,KiF26P,VmPFP,KmF26PK,KmF26PP,K_F26PK,K_F26PP,KiF6P_F2
6P,KiPGA,Vm_St_sink,Ki_cons,Vmcons,VmSuSy,UDP,KeqSuSy,kd_int,ksb1,ksb2,Ks
b1,Ksb2,kdb,ksa1,ksa2,ksa3,kda1,kdai,Ksa1,ksX,kdX,ksGPT,kdGPT,KsGPT,kidiu
rn,Kdiurn0,ksA,kdA,ksi,kdi,Ki_si,dusks,dawns,VmGPT2,Vso);

L1=[];
tw=0.5;
for i=1:size(T)
    Th(i)=T(i);
    L1(i)=Loffset+0.5*Lamplitude*((1+tanh((Th(i)-
24*floor(Th(i)/24))/tw))-(1+tanh((Th(i)-24*floor(Th(i)/24)-
dusk)/tw)))+(1+tanh((Th(i)-24*floor(Th(i)/24)-24)/tw)));
    %L1(i)=0.5*((1+tanh((Th(i)-period*floor(Th(i)/period)-dawn1)/0.5))-
(1+tanh((Th(i)-period*floor(Th(i)/period)-dusk1)/0.5)))+(1+tanh((Th(i)-
period*floor(Th(i)/period)-dawn2)/0.5))-(1+tanh((Th(i)-
period*floor(Th(i)/period)-dusk2)/0.5)))+(1+tanh((Th(i)-
period*floor(Th(i)/period)-period)/0.5))); % skeleton
end

SPst=Ptots-Y(:,43)-Y(:,44)-Y(:,45);
F6Pst=Y(:,44)/(1+KeqPGI+KeqPGI*KeqPGM);
G1Pst=Y(:,44)*KeqPGM/(1+KeqPGM+1/KeqPGI);
G6Pst=Y(:,44)/(1+KeqPGM+1/KeqPGI);

A=2*KeqAld/KeqIso;
B=1+1/KeqIso+ADPs*NADP*Y(:,45)/(ATPs*NADPH*KeqIso*KeqPGAGAP);
DHAPst=0.5*(sqrt(4*A*Y(:,43)+B.*B)-B)/A;
GAPst=DHAPst/KeqIso;
FBPst=KeqAld*DHAPst.*DHAPst/KeqIso;
PGAst=DHAPst*ADPs*NADP.*Y(:,45)/(ATPs*NADPH*KeqIso*KeqPGAGAP);

B1=1+1/KeqIso+ADPc*NADP*Pc/(ATPc*NADPH*KeqIso*KeqPGAGAP);
```

```

DHAPct=0.5*(sqrt(B1*B1+4*A*Y(:,50))-B1)/A;
FBPct=KeqAld*DHAPct.*DHAPct/KeqIso;
PGAct=DHAPct*ADPc*NADP*Pc/(ATPc*NADPH*KeqIso*KeqPGAGAP);
VTPTDHAP=VmTPT*(DHAPst*Pc-DHAPct.*Y(:,45));
VTPTPGA=VmTPT*(PGAst*Pc-PGAct.*Y(:,45));
VGPT=VmGPT2.*L1'.*Y(:,36).*(Y(:,47).*Y(:,45)-Pc*Y(:,44));
VAGPase=Vmagpase*L1'.*G1Pst*ATPs./((G1Pst+KmagpG1P).*(ATPs+KmagpATP*(1+Y(
: ,45)./(KagpPGA*PGAst+0.00001))))./(1+Y(:,51).*Y(:,51)/1000000);
VsFBPase=Vmfbpases*FBPst./(FBPst+Kmfbpase*(1+F6Pst/KiF6Pfbpase));
KDIURN1=Y(:,59)*(1-Vso)/Vso./(1+Y(:,34).*Y(:,34)/kidiurn^2)+Kdiurn0;
VMEX=Vmmex*(Y(:,53)./(Y(:,53)+Kmmex)-Y(:,40)./(Y(:,40)+Kmmex));
VGLUT=Vmglut*(Y(:,55)./(Y(:,55)+KMglut)-Y(:,41)./(Y(:,41)+KMglut));
STB=f*Y(:,51);
STISA=(1-f)*Y(:,51);
VB=Vmb*(1-L1');
KBACT=(0.5-atan(10*(Y(:,38)./(f*(Y(:,37)+Y(:,38))+st0)-1))/pi);
VISA=Vmisa*(1-L1').*STISA./(STISA+KMisa).*(0.5-
atan(10*(Y(:,37)./((Y(:,37)+Y(:,38))*(1-f)+st0)-1))/pi);
VBAMM=VB.*KBACT*fm.*STB./(fm*STB+Kmb*(1+(Y(:,53).*Y(:,53)+Y(:,53).*Y(
: ,54
))/KMr));
VBAMG3=VB.*KBACT*fg3.*STB./(fg3*STB+Kmb*(1+(Y(:,53).*Y(:,53)+Y(:,53).*Y(
: ,54
))/KMr));
VST_DEGR=(VISA+VBAMM+VBAMG3).*Y(:,32);
VD=Vmdpe2*(0.5*Pc.*Y(:,40)-Y(:,46).*Y(:,41)/Kdpee);
VHXK=Vmhxk*Y(:,41)./(Y(:,41)+KMhxk)./(1+Y(:,47)/KiG6P);
VRES=Vmresp*Y(:,50)./(Y(:,50)+KmTHPc);
VSPS=Vmsp*Vmdiurn1.*Y(:,48)./(Y(:,48)+KMF6P).*Y(:,49)./(Y(:,49)+KMUDPG);
VcFBPase=Vmfbpasec*FBPct/(FBPct+Kmfbpasec*(1+Y(:,48)./KiF6Pfbpase+Y(:,49)
/KiF26P));

ST_SINK=L1'.*(Vm_St_sink+VmGPT2.*Y(:,36)).*Y(:,57)./(1+Y(:,51).*Y(:,51)/1
000000);
VST=(VAGPase+ST_SINK);
CONS=Vmcons*Y(:,57)./(1+Y(:,34).*Y(:,34)/Ki_cons/Ki_cons);

GN=p28*Y(:,10)./(p29+m19+p17*Y(:,25));
EGN=(p18*Y(:,4)+p17*Y(:,25).*GN)./(m10*Y(:,26)+m9*Y(:,27)+p22);
E34=p25*Y(:,19).*Y(:,25)./(p26*Y(:,29)+p21+m10*Y(:,26)+m9*Y(:,27));
AR=A0*Y(:,21)./(Y(:,21)+g29);
AR=0.5*(A0+Y(:,21)+g29-sqrt((A0+Y(:,21)+g29).^2-4*A0*Y(:,21)));

figure(7)
plot(T,Y(:,6),'r');
hold on;
plot(T,Y(:,1),'k');
hold on;
title('clock mRNA: LHY-black, TOC1-red');

figure(4)
plot(T,Y(:,52),'k');
hold on;
plot(T,Y(:,53),'b');
hold on;
plot(T,Y(:,54),'m');
hold on;
plot(T,Y(:,55),'g');
hold on;
plot(T,Y(:,56),'r');

```

```

hold on;
plot(T,Y(:,40),'b:');
hold on;
plot(T,Y(:,41),'g:');
hold on;
title({'starch degradation: Slg-black; Ms-blue; G3-mag; G-green; G5-
red'});

```

```

figure (6)
plot(T,Y(:,43),'k');
hold on;
plot(T,PGAst,'k:');
hold on;
plot(T,DHAPst,'k-.');
hold on;
plot(T,Y(:,44),'b');
hold on;
plot(T,G6Pst,'b:');
hold on;
plot(T,F6Pst,'b-.');
hold on;
title({'stromal metabolites: THPs-black(PGA-dot;DHAP-dash); HPs-blue(dot-
G6P;dash-F6P)'});

```

```

figure (5)
plot(T,Y(:,47),'b:');
hold on;
plot(T,Y(:,48),'b-.');
hold on;
plot(T,Y(:,49),'m');
hold on;
plot(T,Y(:,42),'g');
hold on;
plot(T,Y(:,58),'g:');
hold on;
plot(T,Y(:,50),'k');
hold on;
plot(T,Y(:,57),'r');
hold on;
plot(T,Y(:,2),'m:');
hold on;
title({'cytosol metabolites: THPc-black; G6Pc-glue dot(F6P-dash)';'UDPG-
mag; green-sucrose (dot-sink); HPsink-red'});

```

```

figure(1)
plot(T,Y(:,35),'b');
hold on;
plot(T,Y(:,32),'k');
hold on;
plot(T,KDIURN1,'m');
hold on;
plot(T,Y(:,33),'g');
hold on;
plot(T,Y(:,59),'g:');
hold on;
plot(T,Y(:,34),'r:');
hold on;
plot(T,Y(:,36),'r');

```

```
hold on;  
title({'diurnal regulation: betta-blue; D-green dot; alfa-green'; 'I-red  
dot; GPT2-red; X-black'});
```

```
figure (2)  
plot(T,Y(:,51),'k');  
hold on;  
title({'starch'});
```