

FULL MASS ACTION MODEL FOR AND GATE MODULE – ETH_ZURICH 2016 IGEM TEAM

SPECIES

AHL sensor related species	NO sensor related species	Promoter species		
AHL	NO	PnorV0_Pfree	PnorV0_Pesar	PnorV0_Pesar1
EsaR	NoR	PnorV1_Pfree	PnorV1_Pesar	PnorV1_Pesar1
DEsaR	NoR_NO	PnorV2_Pfree	PnorV2_Pesar	PnorV2_Pesar1
DEsaR_AHL1	DNoR	PnorV3_Pfree	PnorV3_Pesar	PnorV3_Pesar1
DEsar_AHL	DNoR_NO1			
	DNoR_NO			

PARAMETERS

AHL sensor related parameters	NO sensor related parameters	Promoter binding/unbinding parameters	
K5	kdnor	knorV1	k7
k_5	k_dnor	k_norV1	k_7
k6	knor_no	knorV2	
k_6	k_nor_no	k_norV2	
dnor_no	knorProd	knorV3	
kesarProd	dnor	k_norV3	
desar	dnor_no		
kesar			

EQUATIONS

```

NO +NoR -> NoR_NO
NO +NoR <- NoR_NO
2NoR_NO -> DNoR_NO
2NoR_NO <- DNoR_NO
2NoR -> DNoR
2NoR <- DNoR
DNoR + NO -> DNoR_NO1
DNoR + NO <- DNoR_NO1
DNoR_NO1 + NO -> DNoR_NO
DNoR_NO1 + NO <- DNoR_NO
-> NoR
NoR ->
DNOR ->
DNoR_NO ->
NoR_NO ->
    
```

```
EsaR + Esar -> DEsar
EsaR + Esar <- DEsar
AHL + DEsar -> DEsar_AHL1
AHL + DEsar <- DEsar_AHL1
AHL + DEsar_AHL1 -> DEsar_AHL
AHL + DEsar_AHL1 <- DEsar_AHL
-> EsaR
EsaR ->
DEsar ->
PnorV0_Pfree + DEsaR <-> PnorV0_Pesar
PnorV0_Pfree + DEsar_AHL <-> PnorV0_Pesar1
PnorV0_Pesar + AHL <-> PnorV0_Pesar1
PnorV0_Pfree + DNOR_NO <-> PnorV1_Pfree
PnorV0_Pesar + DNOR_NO <-> PnorV1_Pesar
PnorV0_Pesar1 + DNOR_NO <-> PnorV1_Pesar1
PnorV1_Pfree + DEsaR <-> PnorV1_Pesar
PnorV1_Pesar + AHL <-> PnorV1_Pesar1
PnorV1_Pesar1 <-> PnorV1_Pfree + DEsar_AHL
PnorV1_Pfree + NO <-> PnorV2_Pfree
PnorV1_PseaR + NO <-> PnorV2_Pesar
PnorV1_PseaR1 + NO <-> PnorV2_Pesar1
PnorV2_Pfree + DEsaR <-> PnorV2_Pesar
PnorV2_Pesar + AHL <-> PnorV2_Pesar1
PnorV2_Pesar1 <-> PnorV2_Pfree + DEsar_AHL
PnorV2_Pfree + NO <-> PnorV3_Pfree
PnorV2_Pesar + NO <-> PnorV3_Pesar
PnorV2_Pesar1 + NO <-> PnorV3_Pesar1
PnorV3_Pfree + DEsaR <-> PnorV3_Pesar
PnorV3_Pesar + AHL <-> PnorV_Pesar1
PnorV3_Pesar1 + AHL <-> PnorV3_Pfree + DEsar_AHL
```