(a)

Intrinsic Noise Analyzer

File Edit Analysis Help

Models

- Species
- Reactions
  - Transcription
  - Translation
  - Enzyme binding
  - Enzyme unbinding
  - Enzyme catalysis
  - mRNA degradation
  - reaction
  - reaction
  - reaction (Reverse)

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Reactions

	Name	Reaction	Propensity
1	Transcription	Gene → Gene +	k0 · Cell · [Gene]
2	Translation	mRNA → Protei	[mRNA] · Cell · ks
3	Enzyme binding	Protein + Enzyn	k1 · [Protein] · Cell · [Enzyme]
4	Enzyme unbindi	Complex → Pro	[Complex] · Cell · k2
5	Enzyme catalys	Complex → Enz	[Complex] · Cell · k2
6	mRNA degradat	mRNA → Ø	[mRNA] · Cell · kdm
		Gene2 → Gene2	[Gene2] · Cell · k
		E2 + P2 → C2	k_fwd · [E2] · Cell · [P2]
		C2 → E2 + P2	k_rev · Cell · [C2]
		M2 → Ø	Cell · [M2] · k
		M2 → P2 + M2	k · Cell · [M2]
		P2 + Gene → GF	k_fwd · Cell · [P2] · [Gene]
		GP2 → P2 + Ger	Cell · k_rev · [GP2]

(c)

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```
@model:3.1.1 = GeneExpression "Gene Expression II"

@units
 substance = mole: s=-6
 time = second: m=60

@compartments
 cell = 1e-15 "cell"

@species
 cell: [Gene]   = 1.66e-08
 cell: [mRNA]   = 0
 cell: [Protein]   = 0
 cell: [Enzyme]   = 0.1
 cell: [Complex]   = 0

@parameters
 k0=1.44578e+06
 ks=1.5
 kdM=0.2
 k1=400
 km1=2
 k2=2

@reactions
 @r= transcription "Transcription"
  Gene -> mRNA + Gene
  k0*Gene*cell

 @r= translation "Translation"
  mRNA -> Protein + mRNA
  ks*mRNA*cell

 @r= degrade_mRNA "mRNA degradation"
  mRNA ->
  mRNA*kdM*cell
```

Cancel Open

(b)

Create new reaction

Specify chemical equation and propensity

Name: Formation of Complex

Chemical equation: A + E -> C

Type: Mass action

Propensity: k·Cell·[A]·[E]

< Back Next > Cancel