



WD1 Wet-lab Data

Type	Label
Description	“Induction of Axin2 mRNA by Wnts in cell culture and ex vivo tissue culture systems.”
Reference	Figure 2
Type of experiment	In vitro
Organism	Mouse
Cell line	C57MG (mammary gland cell line)
Study	Jho et al. 2002

WD1 Wet-lab Data

Type	Label
Description	“Mediator is recruited to Wnt-responsive genes in a β -catenin-dependent manner”
Reference	Figure 2
Type of experiment	In vitro
Organism	Human
Cell line	293Top cells (from HEK kidney embryonic epithelial cell line 293)
Study	Kim et al. 2006

ASM1 Analyzing simulation model

Type	Label
Description	Extended analysis of Lee model
Study	Wawra et al. 2007

SE1 Experiment

Type	Label
Description	“Extended single parameter perturbation analysis of the Lee–Heinrich model”
Reference	Not available
Category	Sensitivity analysis
Study	Wawra et al. 2007

SD1 Data

Type	Label
Description	Simulation results of SE1
Reference	Figure 2 + Figure 4 and Table 1 of Suppl. Material
Related to	SE1
Study	Wawra et al. 2007

SE2 Experiment

Type	Label
Description	“Multiple-parameter perturbations vs. single parameter perturbation” of Lee-Heinrich model
Reference	Not available
Category	Sensitivity analysis
Study	Wawra et al. 2007

SD2 Data

Type	Label
Description	Simulation results of SE2
Reference	Table 2 of Suppl. Material
Related to	SE2
Study	Wawra et al. 2007

SE3 Experiment

Type	Label
Description	“using different initial reference states” to see whether “varying initial conditions yield different models”
Reference	Not available
Category	Sensitivity analysis
Study	Wawra et al. 2007

SD3 Data

Type	Label
Description	Simulation results of SE3
Reference	Table 4 of Suppl. Material
Related to	SE3
Study	Wawra et al. 2007

RQ1 Research question

Type	Label
Description	“ask whether intrinsic oscillations of the pathway can occur, i.e. during vertebrate somitogenesis”
Study	Wawra et al. 2007

QM1 Qualitative model

Type	Label
Description	“used the Lee–Heinrich model as a basis to integrate two feedback loops using time-delay differential equations”
Reference	Figure 1
Species	dishevelled (Dsh), GSK3 β , APC, Axin, β -catenin, TCF, Axin2, Inhibitor 2
Compartments	Cytosol
Study	Wawra et al. 2007

A1 Assumption

Type	Label
Description	“assume a cooperative activation of the Wnt target genes and use a sigmoidal Hill function for the activation of transcription”
Category	Hill-type rate law (192)
Study	Wawra et al. 2007

A2 Assumption

Type	Label
Description	“As there are no quantitative data concerning the naked or DKK1 concentrations available, we used as an approximation the same synthesis and turnover rates specified for Axin2” (regarding inhibitor 2)
Category	Kinetic constant (9)
Study	Wawra et al. 2007

A3 Assumption

Type	Label
Description	“As the DKK1 protein is smaller than Axin2, has a smaller primary transcript length, and also has fewer introns, the time delays related to transcription and processing were assumed to be shorter” (regarding inhibitor 2)
Category	Transcription (183)
Study	Wawra et al. 2007

BSM1 Building simulation model

Type	Label
Description	Extension of Lee model
Study	Wawra et al. 2007

SM1 Simulation model

Type	Label
Description	extended Lee model “extended the Lee–Heinrich model by two feedback loops caused by direct targets of the pathway” “using time-delay differential equations” → see Section 7 in supplementary material
Reference	Not available
Study	Wawra et al. 2007

ASM2 Analyzing simulation model

Type	Label
Description	Analysis of extended Lee model
Study	Wawra et al. 2007

SE4 Experiment

Type	Label
Description	“varied the delays, the Hill coefficient, and parameters concerning the Axin2 increase and Axin/Axin2 fraction”
Reference	Not available
Category	Time course analysis
Study	Wawra et al. 2007

SD4 Data

Type	Label
Description	Simulation results of SE4
Reference	“Due to the integrated negative feedback the β -catenin steady state is approximately 38% lower than in the Lee–Heinrich model”
Related to	SE4
Study	Wawra et al. 2007

SE5 Experiment

Type	Label
Description	“we increased β -catenin and Axin flux through the original Lee–Heinrich model by factors ranging from 2 to 20”
Reference	Not available
Category	Parameter scan
Study	Wawra et al. 2007

SD5 Data

Type	Label
Description	Simulation results of SE5
Reference	“With these modifications we observed an oscillating system with cycle durations (T) between 159 and 424 min”
Related to	SE5
Study	Wawra et al. 2007

SE6 Experiment

Type	Label
Description	“Stable oscillation of the feedback-augmented Lee–Heinrich model” (for various Hill coefficients are shown)
Reference	Not available
Category	Parameter scan
Study	Wawra et al. 2007

SD6 Data

Type	Label
Description	Simulation results of SE6
Reference	Figure 3
Related to	SE6
Study	Wawra et al. 2007

SE7 Experiment

Type	Label
Description	“For the settings resulting in the fastest oscillation, we investigated the influence of the second feedback loops by modifying the impact of DKK1”
Reference	Not available
Category	Time course analysis
Study	Wawra et al. 2007

SD7 Data

Type	Label
Description	Simulation results of SE7
Reference	“For a moderate Hill coefficient of 5 the second feedback loop is necessary for stable oscillation. With increased cooperativity ($m = 5, 10$) the system can oscillate solely with the Axin2 feedback loop.”
Related to	SE7
Study	Wawra et al. 2007