



# WD1 Data

Type	Label
Description	“ $\beta$ -catenin accumulation in cytosol and nuclear fractions during ReNcell VM cell differentiation”
Reference	Figure 8
Type of experiment	In vitro
Organism	Human
Cell line	Neural progenitor cells (ReNcell VM cell line)
Study	Mazemondet et al. 2011

# WD2 Data

Type	Label
Description	“Cell cycle analyses by FACS assay and expression of cyclin D1 during differentiation of ReNcell VM cells.”
Reference	Figure 2
Type of experiment	In vitro
Organism	Human
Cell line	Neural progenitor cells (ReNcell VM cell line)
Study	Mazemondet et al. 2011

# RQ1 Research question

Type	Label
Description	“question of whether observed kinetics of the Wnt/ $\beta$ -catenin pathway in later differentiation phases are subject to self-induced signaling”
Study	Mazemondet et al. 2012

# QM1 Qualitative model

Type	Label
Description	Schematic description of Wnt model
Reference	Figure 2
Species	Wnt, $\beta$ -catenin, Axin
Compartments	Cytosol, nucleus
Study	Mazemondet et al. 2012

# A1 Assumption

Type	Label
Description	“Our model reflects this fact by considering a given initial amount of Wnt. The effect of the signal decreases over time, since Wnt decays and is not further produced”
Category	Degradation (179)
Study	Mazemondet et al. 2012

# A2 Assumption

Type	Label
Description	“Our model reflects this fact by considering a given initial amount of Wnt. The effect of the signal decreases over time, since Wnt decays and is not further produced”
Category	Concentration of Reactant (509)
Study	Mazemondet et al. 2012

# A3 Assumption

Type	Label
Description	“usual assumptions made when modeling cell-biological systems, i.e., constant compartment volumes, molecules without volumes, etc. [18]”
Category	Physical Compartment (290)
Study	Mazemondet et al. 2012



# A4 Assumption

Type	Label
Description	“abstract the degradation complex by only one of its components, Axin”
Category	Equivalence (392)
Study	Mazemondet et al. 2012

# A5 Assumption

Type	Label
Description	“binding of Wnt molecules to the membrane receptors is not represented”
Category	Omitted process (397)
Study	Mazemondet et al. 2012

# A6 Assumption

Type	Label
Description	“reaction of Wnt decay represents both its consumption and deactivation after signaling”
Category	Inhibition (169)
Study	Mazemondet et al. 2012

# A7 Assumption

Type	Label
Description	“reaction of Wnt decay represents both its consumption and deactivation after signaling”
Category	Consumption (394)
Study	Mazemondet et al. 2012

# A8 Assumption

Type	Label
Description	“introduce the motion of $\beta$ -catenin as a simple diffusion”
Category	Passive transport (658)
Study	Mazemondet et al. 2012

# BSM1 Building simulation model

Type	Label
Description	Creation of core model (Derivative of the Lee model)
Study	Mazemondet et al. 2012

# SM1 Simulation model

Type	Label
Description	“core model of the Wnt/ $\beta$ -catenin pathway is derived from the Lee model and covers the basic components and processes in two compartments” → Table 1 (reaction rules), parameter values: Table 2
Reference	Not available
Study	Mazemondet et al. 2012

# CSM1 Calibrating simulation model

Type	Label
Description	Parameter fitting (to Lee model results) and sensitivity analysis
Study	Mazemondet et al. 2012



# SE1 Experiment

Type	Label
Description	Calibration: parameter fitting and sensitivity analysis
Reference	Not available
Category	Optimization
Study	Mazemondet et al. 2012

# SD1 Data

Type	Label
Description	Simulation results of SE1
Reference	Table 3 (Set 1) and Table S1
Related to	SE1
Study	Mazemondet et al. 2012

# SM2 Simulation model

Type	Label
Description	Core model fitted to the Lee model → Table 1, parameter values: Table 3 (Set 1)
Reference	Not available
Study	Mazemondet et al. 2012

# ASM1 Analyzing simulation model

Type	Label
Description	Comparison of beta-catenin dynamics between core model and Lee model results
Study	Mazemondet et al. 2012

# SE2 Experiment

Type	Label
Description	“first (simulation experiment) compares to the Lee model to show that we cover the basic machinery of the Wnt/ $\beta$ -catenin pathway, as it is currently known”
Reference	Not available
Category	Time course analysis
Study	Mazemondet et al. 2012

# SD2 Data

Type	Label
Description	Simulation results of SE2
Reference	Figure 3
Related to	SE2
Study	Mazemondet et al. 2012

# CSM2 Calibrating simulation model

Type	Label
Description	Parameter fitting (to own wet lab results)
Study	Mazemondet et al. 2012

# SE3 Experiment

Type	Label
Description	Calibration: parameter fitting (only for $t \leq 2h$ )
Reference	Not available
Category	Optimization
Study	Mazemondet et al. 2012



# SD3 Data

Type	Label
Description	Simulation results of SE3
Reference	Table 3 (Set 2)
Related to	SE3
Study	Mazemondet et al. 2012

# SM3 Simulation model

Type	Label
Description	Core model fitted to own data → Table 1, parameter values: Table 3 (Set 2)
Reference	<a href="https://www.ebi.ac.uk/biomodels/MODEL1303140000">https://www.ebi.ac.uk/biomodels/MODEL1303140000</a>
Study	Mazemondet et al. 2012

# ASM2 Analyzing simulation model

Type	Label
Description	Comparison of beta-catenin dynamics between core model and own wet-lab results
Study	Mazemondet et al. 2012

# SE4 Experiment

Type	Label
Description	“the second (simulation experiment) compares to our own experimental data”
Reference	Not available
Category	Time course analysis
Study	Mazemondet et al. 2012

# SD4 Data

Type	Label
Description	Simulation results of SE4
Reference	Figure 4
Related to	SE4
Study	Mazemondet et al. 2012

# BSM2 Building simulation model

Type	Label
Description	Transformation of parameters for stochastics model (numbers instead of concentrations)
Study	Mazemondet et al. 2012

# SM4 Simulation model

Type	Label
Description	Core model fitted to own data and transformed to stochastic version→ Table 1, parameter values: not shown (but should be equivalent to Table 3 (Set 2))
Reference	Not available
Study	Mazemondet et al. 2012

# ASM3 Analyzing simulation model

Type	Label
Description	Stochastic simulation (without Wnt)
Study	Mazemondet et al. 2012



# SE5 Experiment

Type	Label
Description	“Effects of AxinP on $\beta$ -catenin dynamics according to stochastic simulation” (without Wnt)
Reference	Not available
Category	Time course analysis
Study	Mazemondet et al. 2012

# SD5 Data

Type	Label
Description	Simulation results of SE5
Reference	Figure 5 A, B
Related to	SE5
Study	Mazemondet et al. 2012

# SE6 Experiment

Type	Label
Description	“decrease the rate constant of AixinP-dependent $\beta$ -catenin degradation and maintain the $\beta$ -catenin level by simultaneously decreasing the flux of $\beta$ _cyt-production”
Reference	Not available
Category	Parameter scan
Study	Mazemondet et al. 2012

# SD6 Data

Type	Label
Description	Simulation results of SE6
Reference	“small changes of this sort, the amount of $\beta_{\text{nuc}}$ is prevented from increasing in response to Wnt signal”
Related to	SE6
Study	Mazemondet et al. 2012

# SE7 Experiment

Type	Label
Description	“Effects of AxinP on $\beta$ -catenin dynamics according to stochastic simulation” (without Wnt) with 1000x faster (de)phosphorylation of Axin
Reference	Not available
Category	Time course analysis
Study	Mazemondet et al. 2012

# SD7 Data

Type	Label
Description	Simulation results of SE7
Reference	Figure 5 C, D
Related to	SE7
Study	Mazemondet et al. 2012

# CSM3 Calibrating simulation model

Type	Label
Description	Parameter fitting to minimize stochastic fluctuations
Study	Mazemondet et al. 2012

# SM5 Simulation model

Type	Label
Description	SM4 fitted to minimize fluctuations→ Table 1, parameter values: Table 3 (Set 3)
Reference	Not available
Study	Mazemondet et al. 2012



# ASM4 Analyzing simulation model

Type	Label
Description	Stochastic simulations (without and with Wnt)
Study	Mazemondet et al. 2012

# SE8 Experiment

Type	Label
Description	“dynamics of $\beta_{\text{nuc}}$ for 10 simulation runs are shown, where the Wnt signal is switched off” / and on
Reference	Not available
Category	Perturbation
Study	Mazemondet et al. 2012

# SD8 Data

Type	Label
Description	Simulation results of SE8
Reference	Figure 6 A, B
Related to	SE8
Study	Mazemondet et al. 2012

# BSM3 Building simulation model

Type	Label
Description	Integration of delays into stochastic model
Study	Mazemondet et al. 2012

# A9 Assumption

Type	Label
Description	“assume self-induced signaling to happen in an autocrine fashion”
Category	Unknown (0)
Study	Mazemondet et al. 2012

# SM6 Simulation model

Type	Label
Description	SM5 with delays to incorporate cell cycle
Reference	Not available
Study	Mazemondet et al. 2012

# ASM5 Analyzing simulation model

Type	Label
Description	Stochastic simulations
Study	Mazemondet et al. 2012

# SE9 Experiment

Type	Label
Description	“simulation experiments with the parameters in Table 3, Set 3 (...) with 100 cells”
Reference	Not available
Category	Time course analysis
Study	Mazemondet et al. 2012



# SD9 Data

Type	Label
Description	Simulation results of SE9
Reference	Figure 7 A
Related to	SE9
Study	Mazemondet et al. 2012

# CSM4 Calibrating simulation model

Type	Label
Description	Parameter fit for the first 2h
Study	Mazemondet et al. 2012

# SM7 Simulation model

Type	Label
Description	SM6 fitted to own data (first 2h) → Table 1, parameter values: Table 3 (Set 4)
Reference	Not available
Study	Mazemondet et al. 2012

# ASM6 Analyzing simulation model

Type	Label
Description	Stochastic simulations
Study	Mazemondet et al. 2012

# SE10 Experiment

Type	Label
Description	“simulation experiments with the parameters in Table 3, Set 4”
Reference	Not available
Category	Time course analysis
Study	Mazemondet et al. 2012

# SD10 Data

Type	Label
Description	Simulation results of SE10
Reference	Figure 7B, C
Related to	SE10
Study	Mazemondet et al. 2012

# BSM4 Building simulation model

Type	Label
Description	Model extension
Study	Mazemondet et al. 2012

# SM8 Simulation model

Type	Label
Description	SM7 extended by Wnt production (autocrine signaling)
Reference	Not available
Study	Mazemondet et al. 2012



# ASM7 Analyzing simulation model

Type	Label
Description	Stochastic simulations
Study	Mazemondet et al. 2012

# SE11 Experiment

Type	Label
Description	“simulation experiment with a cell population of 100 cells and a Wnt induction delay of 150 minutes (2.5 hours)”
Reference	Not available
Category	Time course analysis
Study	Mazemondet et al. 2012

# SD11 Data

Type	Label
Description	Simulation results of SE11
Reference	Figure 7D
Related to	SE11
Study	Mazemondet et al. 2012