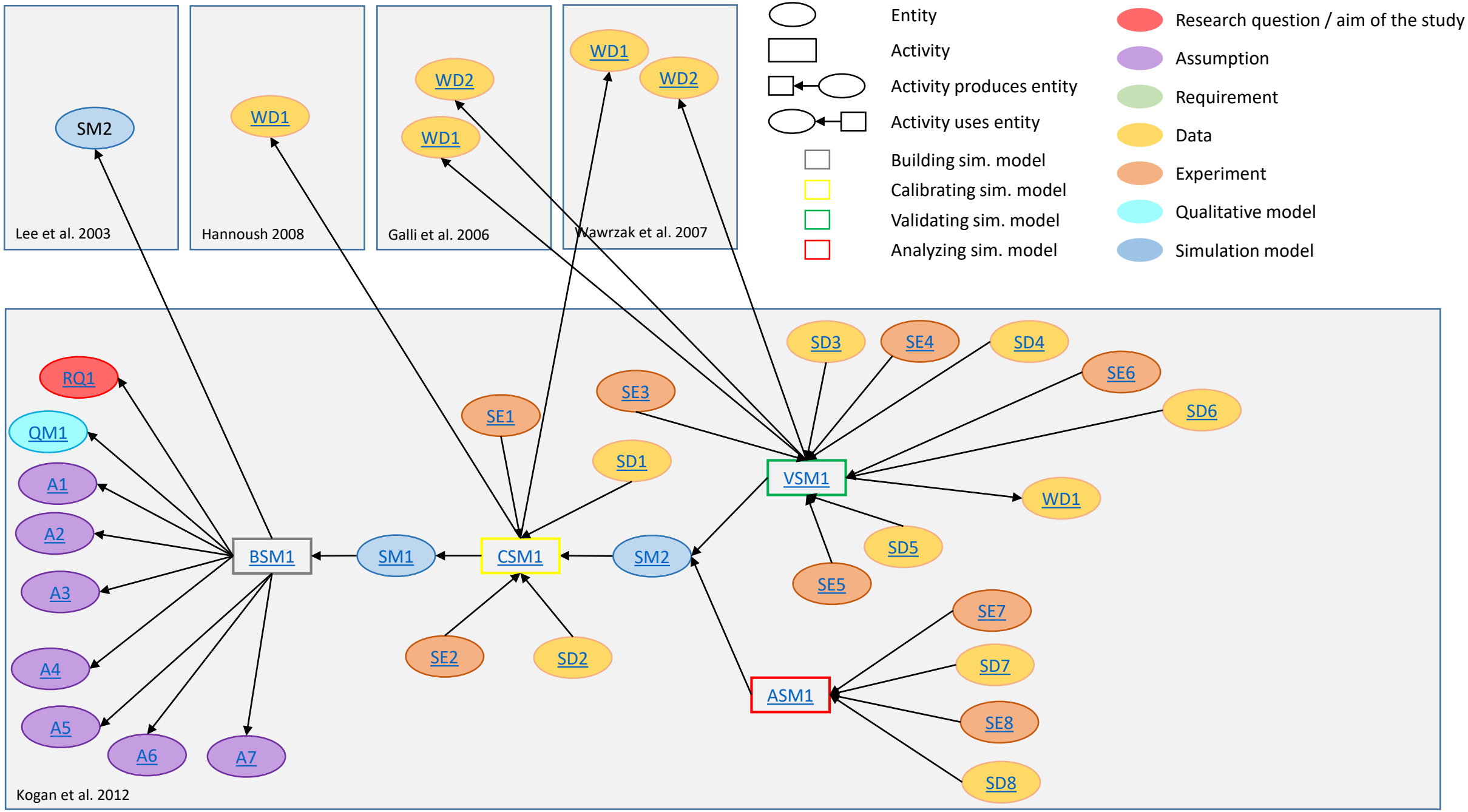
Lee et al. 2003
SM2
Hannoush 2008
WD1
Galli et al. 2006
WD2
WD1
Wawrzak et al. 2007
WD1
WD2
Entity
Activity
Activity produces entity
Activity uses entity
Building sim. model
Calibrating sim. model
Validating sim. model
Analyzing sim. model
Research question / aim of the study
Assumption
Requirement
Data
Experiment
Qualitative model
Simulation model
Kogan et al. 2012
RQ1
QM1
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BSM1
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SD7
SE8
SD8

WD1 Data

Type	Label
Description	Kinetics of cellular β-catenin accumulation upon stimulation with Wnt3a
Reference	Figure 4C, 4D
Type of experiment	In vitro
Organism	Mouse
Cell line	Fibroblasts L cells
Study	Hannoush 2008

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WD1 Data

Type	Label
Description	“Development of quantitative assay to measure Wnt-3a induced accumulation of β-catenin in L cells”
Reference	Figure 1
Type of experiment	In vitro
Organism	Mouse
Cell line	L cells
Study	Galli et al. 2006

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WD2 Data

Type	Label
Description	“Attenuation of Wnt-3a activity by Sfrp-1 and Sfrp-2, but not Sfrp-3”
Reference	Figure 2
Type of experiment	In vitro
Organism	Mouse
Cell line	L cells
Study	Galli et al. 2006

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WD1 Data

Type	Label
Description	“Binding parameters of Wnt3a to sFRPs”
Reference	Table 1
Type of experiment	In vitro
Organism	Mouse
Cell line	L cells
Study	Wawrzak et al. 2007

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WD2 Data

Type	Label
Description	“Wnt3a induced accumulation of β-catenin in L cells that is blocked by sFRP1 and sFRP2 but not by Frzb or sFRP4”
Reference	Figure 2
Type of experiment	In vitro
Organism	Mouse
Cell line	L cells
Study	Wawrzak et al. 2007

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RQ1 Research question

Type	Label
Description	“allow precise calculation of the effect of inhibitors applied alone or in combination, and provide a flexible framework for identifying potential targets for intervention in the Wnt signalling pathway”
Study	Kogan et al. 2012

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QM1 Qualitative model

Type	Label
Description	Schematic description of Wnt model
Reference	Figure 1
Species	sFRP (secreted Frizzled-related protein), Wnt, Frizzled, LRP, Dkk, destruction complex (GSK-Axin-APC), β-catenin
Compartments	Cytosol
Study	Kogan et al. 2012

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A1 Assumption

Type	Label
Description	“upon dissociation from phosphorylated β-catenin, the destruction complex may bind another β-catenin molecule”
Category	Number of binding sites (189)
Study	Kogan et al. 2012

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A2 Assumption

Type	Label
Description	“β-catenin is produced at a constant rate”
Category	Kinetic constant (9)
Study	Kogan et al. 2012

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A3 Assumption

Type	Label
Description	“an additional slow degradation path of β-catenin, independent of the destruction complex”
Category	Degradation (179)
Study	Kogan et al. 2012

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A4 Assumption

Type	Label
Description	“destruction complex is at rapid equilibrium with all of its components”
Category	Equilibrium or steady-state constant (193)
Study	Kogan et al. 2012

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A5 Assumption

Type	Label
Description	“represent β-catenin phosphorylation, dissociation from the complex and degradation as a one-step process”
Category	omitted process (397)
Study	Kogan et al. 2012

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A6 Assumption

Type	Label
Description	“binding of the destruction complex to the intracellular domain of LRP is reversible, and upon dissociation the receptor complex decomposes into its components”
Category	Reversible process (650)
Study	Kogan et al. 2012

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A7 Assumption

Type	Label
Description	“total concentrations of all system components, except for β-catenin, are assumed to be constant over the time of interest”
Category	Concentration Conservation Law (362)
Study	Kogan et al. 2012

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BSM1 Building simulation model

Type	Label
Description	ODE model with parameters from different sources
Study	Kogan et al. 2012

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SM1 Simulation model

Type	Label
Description	“model describes the dynamics of 13 state variables, representing concentrations of the modelled pathway components by a system of seven ODEs. The system is closed by six conservation equations for the total concentrations of Wnt (W_T), destruction complex (C_T), sFRP (S_T) and Dkk (D_T) and for the numbers of Frizzled (F_T) and LRP (L_T) receptors” “parameters from different sources”
Reference	Not available
Study	Kogan et al. 2012

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CSM1 Calibrating simulation model

Type	Label
Description	Model calibration
Study	Kogan et al. 2012

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SE1 Experiment

Type	Label
Description	model calibration “Each subset of model parameters was adjusted by fitting model predictions to the partial training set, whereas other parameters were set at their initially estimated values”
Reference	Not available
Category	Optimization
Study	Kogan et al. 2012

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SD1 Data

Type	Label
Description	Simulation results of SE1
Reference	Figure 2
Related to	SE1
Study	Kogan et al. 2012

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SE2 Experiment

Type	Label
Description	model calibration “select the best-predictive parameter set among the sets obtained in the first step, we simulated the application of all of the ten Wnt3a doses experimentally tested in [38]”
Reference	Not available
Category	Time course analysis
Study	Kogan et al. 2012

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SD2 Data

Type	Label
Description	Simulation results of SE2
Reference	Figures 2, 3
Related to	SE2
Study	Kogan et al. 2012

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SM2 Simulation model

Type	Label
Description	Calibrated model
Reference	Not available
Study	Kogan et al. 2012

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VSM1 Validating simulation model

Type	Label
Description	Model validation
Study	Kogan et al. 2012

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SE3 Experiment

Type	Label
Description	“The model was simulated over 2 or 3 h, corresponding to the duration of the respective experiment, and total computed β-catenin accumulation was compared with the experimental results.” ([39, 40])
Reference	Not available
Category	Parameter scan
Study	Kogan et al. 2012

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SD3 Data

Type	Label
Description	Simulation results of SE3 (validation successful)
Reference	Figure 4
Related to	SE3
Study	Kogan et al. 2012

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SE4 Experiment

Type	Label
Description	“predict the inhibition effects of sFRP1 on β-catenin accumulation”
Reference	Not available
Category	Parameter scan
Study	Kogan et al. 2012

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SD4 Data

Type	Label
Description	Simulation results of SE4 (validation successful)
Reference	Figure 5
Related to	SE4
Study	Kogan et al. 2012

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SE5 Experiment

Type	Label
Description	“predict the inhibition effects of sFRP2 on β-catenin accumulation”
Reference	Not available
Category	Parameter scan
Study	Kogan et al. 2012

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SD5 Data

Type	Label
Description	Simulation results of SE5 (validation unsuccessful)
Reference	Figure 6
Related to	SE5
Study	Kogan et al. 2012

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WD1 Data

Type	Label
Description	“Assaying Wnt3a signalling (and inhibition by Dkk1) by measuring β-catenin accumulation”, “β-catenin levels were detected by immunoblotting with anti-β catenin mouse monoclonal antibody and measured in Bio-Rad Laboratories ChemiDoc XRS”
Reference	Figure 7B
Type of experiment	In vitro
Organism	Mouse
Cell line	L cells (fibroblasts)
Study	Kogan et al. 2012

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SE6 Experiment

Type	Label
Description	“Inhibition of β-catenin accumulation by Dkk1”
Reference	Not available
Category	Parameter scan
Study	Kogan et al. 2012

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SD6 Data

Type	Label
Description	Simulation results of SE6 (validation successful)
Reference	Figure 7A
Related to	SE6
Study	Kogan et al. 2012

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ASM1 Analyzing simulation model

Type	Label
Description	Analyzing combined effects of sFRP1 and Dkk1
Study	Kogan et al. 2012

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SE7 Experiment

Type	Label
Description	“simulated the combined effect of sFRP1 and Dkk1 on Wnt-induced β-catenin accumulation”
Reference	Not available
Category	Parameter scan
Study	Kogan et al. 2012

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SD7 Data

Type	Label
Description	Simulation results of SE7
Reference	Figure 8, Table 2
Related to	SE7
Study	Kogan et al. 2012

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SE8 Experiment

Type	Label
Description	“application of the same concentration combinations, varying each of the model parameter values up to +− 50 %”
Reference	Not available
Category	Parameter scan
Study	Kogan et al. 2012

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SD8 Data

Type	Label
Description	Simulation results of SE8
Reference	“observed similar synergistic behaviour under all of the Dkk1, sFRP1 and Wnt3a concentrations tested (results not shown)”
Related to	SE8
Study	Kogan et al. 2012

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