# Paper Planning Guide

## Working Title

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| Modularisation of published and novel submodels toward a complex KIR2DL4  pathway in pbNK cell. |

## Target Journal

Where are you planning to publish and how will this affect your article? E.g. theoretical or physiological journal?

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## Hypothesis

A short paragraph which outlines what your paper is trying to show. This will end up being stated in one way or another in both your Introduction and Abstract:

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| This model uses mathematical modelling to investigate the downstream effects of NK cells' activation (KIR2DL4) receptor after stimulation by key ligand (HLA-G) on pbNK cells. Development of this large pathway is based on a comprehensive qualitative description of pbNKs' intracellular signalling pathways leading to chemokine and cytotoxin secretion, obtained from the KEGG database (https://www.genome.jp/kegg-bin/show\_pathway?hsa04650). From this qualitative description we built a quantitative model for the pathway, reusing existing curated models where possible and implementing new models as needed. This large pathway consists of two published sub-models; the Ca2+ model and the NFAT model, and a newly built FCRI sub-model. The model predicts the production of IFN and TNF cytokines. The full pathway was fitted to an NK cell published dataset and the model that we developed fitted well to one of two secreted cytokine. |

## Knowledge Gaps

Why is your hypothesis important – what is **new**?

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| The full KIR2DL4 pathway that was modularized from published and novel short pathways was fitted to an NK cell published dataset and the model that we developed fitted well to one of two secreted cytokine. |

## Figures and Tables

Here list the figures and tables that you are going to include and how they relate to your hypothesis. At this stage you **do not need to generate figures**, unless you have already done so, just think about how you will use them to tell your story.

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| Full pathway of KIR2DL4  A phylogenetic tree showing the relationships among existing and new submodels.  The existing pathways - resimulate  The new pathway – fitting and sensitivity results  The modularization of full pathway – fitting and sensitivity analysis |

## Important discussion points…

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