Computational Model

To asses the theoretical plausibility of the model presented in Figure 8 we implemented a computational model that simulates the growth od the *Arabidopsis* root meristem integrating the genetic circuit that controls WOX5 homeostatsis (Figure ?).The computational model is built upon a previous version of a mechano-biochemical model of the *Arabidopsis* root (Marconi et al., 2021, eLife) that was modified to integrate WOX5 homeostasis. In the current model WOX5 is regulated indirectly by auxin throught MPK3/6 which concurrently represses WOX5 transcription and promotes WOX5 levels. WOX5 is only expressed in the QC and regulates cell division: average levels of WOX5 repress cell division while extreme levels allow cell division. We also tested a scenario where WOX5 feedbacks on auxin promoting its biosynthesis. For simplicity, the model does not explicitly simulates MPK3/6 level but instead assumes a direct regulation of WOX5 by auxin (Figure ?).