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Computational modelling of mycobacterium infection and innate immune response in zebrafish

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Stellingen

Behorende bij het proefschrift

Computational Modeling of *Mycobacterium* Infection and Innate Immune Response in Zebrafish

1. Computational models with a visual component can describe functionalities and behavior of biological phenomena better compared to strict mathematical models. (this thesis)
2. Simplification, modularization and extensibility are key steps in the modeling process necessary to build a model that can concisely summarize and replicate the information about the biological process. (this thesis)
3. Biological systems are composed of multiple functional processes which involves complex interconnected networks in a cross talk interaction. A hierarchical multi-scale model organization is very suitable so as to be able to conceptualize the modeling objective. (this thesis)
4. The refinement process of the model can expand the model structure as more detailed processes are added. Therefore, a modular and extensible model structure is indispensable support the augmentation of the model information. (this thesis)
5. The Petri Net is an ideal computational formalism to model biological phenomena that involves spatial, temporal and functional scales. (this thesis)
6. Using the concept of colors in a qualitative Petri net as underlying data structure, renders not only folding nets in compact structure as well as to quantify the model. (this thesis)
7. The complex process of bridging molecular, intracellular and intercellular scales in a model can well be simplified through the concept of the presence or absence of a token in Petri Net formalism. (this thesis)
8. The process of migration from qualitative to quantitative model is less tedious in a Petri Net if you have a modular and extensible model allied with a good modeling decision. (in this thesis)
9. The arguments of the non-existence of a deity are strong as a sugar powder in a blind men's hand.