

MOLECULAR COMMUNICATION IN BIOLOGICAL CELLS: FOUNDATIONAL
STUDY AND DEVELOPMENT OF COMPUTATIONAL TECHNIQUES

by

Zahmeeth Sayed Sakka

A DISSERTATION PROPOSAL

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfilment of Requirements

For the Degree of Doctor of Philosophy

Major: Computer Engineering

Committee Members: Massimiliano Pierobon, Chair

Myra B. Cohen

Juan Cui

Tomas Helikar

Christopher Henry

Lincoln, Nebraska

May 15, 2018

ACKNOWLEDGMENTS

Your ack

Contents

Contents	iii
List of Figures	iv
List of Tables	v
1 Introduction	1
2 Background	2
2.1 Motivation	2
2.2 Biological Pathways	2
2.2.1 Signal Transduction	3
3 Molecular Communication in Cell Metabolism	4
4 Conclusion	5
4.1 Proposed Timeline	5
Bibliography	7

List of Figures

2.1	Graphical representation of the interconnection of signal transduction, gene regulation and metabolic pathways.	3
-----	--	---

List of Tables

4.1	Proposed Timeline.	6
-----	----------------------------	---

Chapter 1

Introduction

Your Intro

Chapter 2

Background

2.1 Motivation

Your Motivation

2.2 Biological Pathways

Your Details

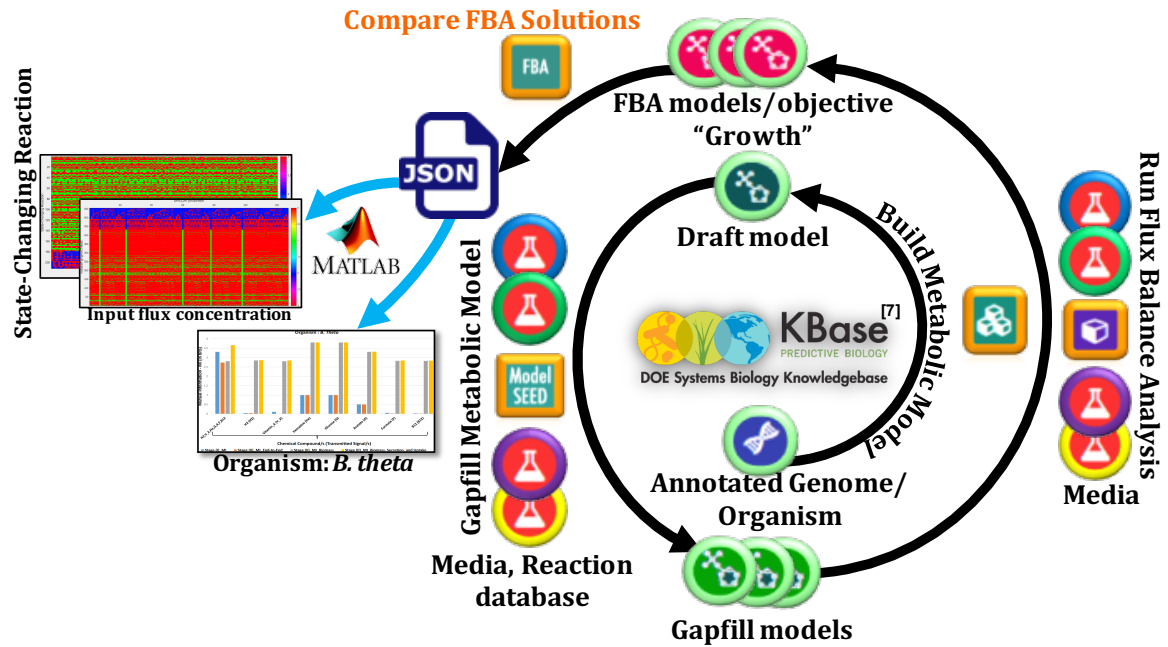


Figure 2.1: Graphical representation of the interconnection of signal transduction, gene regulation and metabolic pathways.

2.2.1 Signal Transduction

Your subsection

ll's internal biological pathways. The main challenges in achieving this goal is a follows:

- AAA
- BBB

Chapter 3

Molecular Communication in Cell Metabolism

Reference [?].

$$\begin{aligned} r_i &\simeq \beta H ([TF^*] - K_d) \text{ if activation ,} \\ r_i &\simeq \beta H (K_d - [TF^*]) \text{ if repression ;} \end{aligned} \tag{3.1}$$

equation reference (3.1).

Chapter 4

Conclusion

4.1 Proposed Timeline

The future research is planned in a 16-20-month timespan, and consists of the following five phases as shown in Table 4.1. This plan may be subject to changes based on the circumstances.

Bibliography