

MSc. Bioinformatik Forschungsmodulbericht

INSERT TITLE

Moritz Kieken

Matrikelnummer: 4179384

moritz.k@fu-berlin.de

Reviewer

Prof. Dr. Dorothee Günzel

Berlin, January 10, 2019

Contents

1	Introduction	1
2	Material and Methods	3
3	Results	4
4	Discussion	5

1 Introduction

Every year about 200 million people are contracted with Malaria. Half a million to one million people succumb to the disease annually, especially children and elderly persons. It is, therefore, along with AIDS and tuberculosis one of the most common infectious diseases worldwide.

Malaria is predominantly found in tropical and subtropical regions. The high spread of Malaria in these regions can be attributed to mosquitos which function as vectors for a unicellular, eukaryotic organism of the genus *Plasmodium*.

Plasmodia are the pathogens that cause Malaria. They are parasites that live in the human liver cells and blood cells where they primarily feed on hemoglobin. A more detailed description of the life cycle of *Plasmodium* can be found in Fig. 1.

There are five known species of the *Plasmodium* genus that infect humans: *P. vivax*, *P. falciparum*, *P. malariae*, *P. ovale* and *P. knowlesi*, with *P. falciparum* being responsible for the most deaths.

The containment of Malaria is usually implemented prophylactically by reducing the Mosquito population. The common types are:

- Chemical: insecticide (like the controversial DDT) or agents that target the larvae in the water;
- Biological: introducing natural predators like the mosquitofish, certain dragonfly species or viruses and bacteria that target mosquitos;
- Natural: destruction of breeding grounds (i.e. draining/removing water) or the usage of mosquito nets.

In case of an infection several antimalarial drugs are available like artemisinin, DOX (doxycycline), chloroquine and many more. However, the increasing resistance of Plasmodia to certain drugs is a serious problem. Often a combination of drugs has to be used to treat a patient successfully. Hence, scientists search for new drugs and molecular starting points to specifically target the *Plasmodium* cells.

In this report I will introduce four papers that deal with the topic of finding new

approaches to treat Malaria.

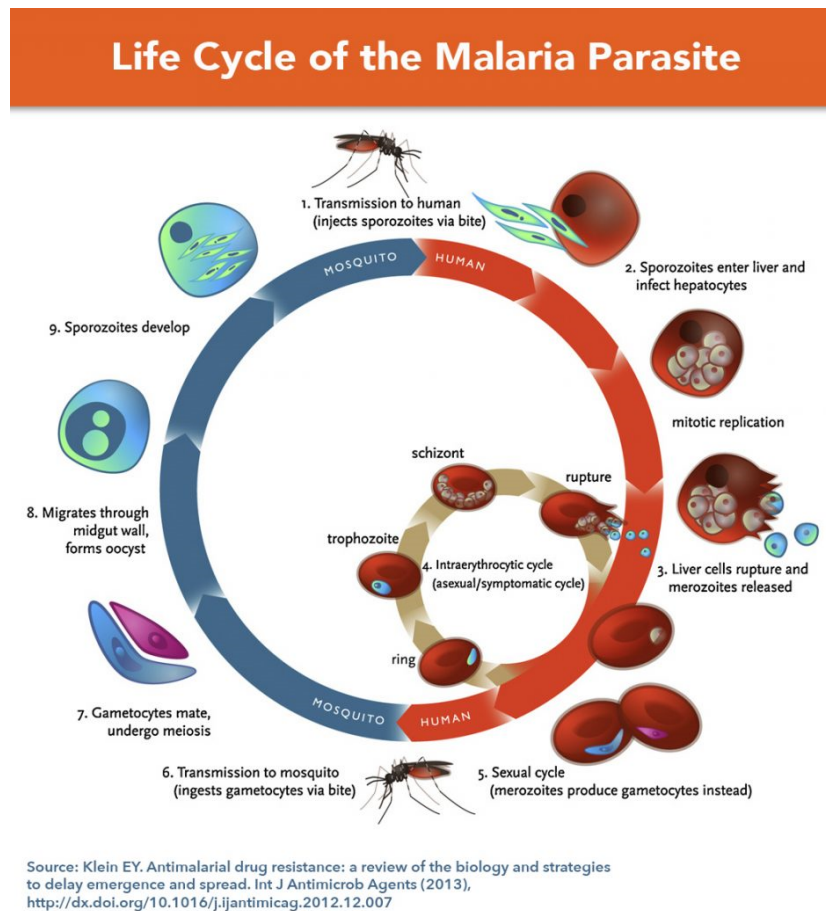


Figure 1: Structure of a eukaryotic mature mRNA. From left to right: 5' cap, 5' UTR, coding sequence, 3' UTR and poly(A) tail. Source: https://en.wikipedia.org/wiki/File:MRNA_structure.svg

2 Material and Methods

3 Results

4 Discussion