Status of CIPKeBiP: Coordinator

Title of the project: **Proteomic and aptamer-based approaches for study of host-pathogen interactions in staphylococcal and clostridial infections**

Coordinator: **Prof.Dr. Maja Rupnik**

ARRS code: J3-5500 (D)

General information on financing

Duration: 1.8.2013 - 31.7.2016

Participating research organizations

ARRS code	Research organization	Status
2990	Centre of excellence for integrated approaches in chemistry and biology of proteins, Ljubljana	Private research institution (coordinator)
2592	ACIES BIO, biotehnološke raziskave in razvoj, d.o.o.	Company
3030	Center of Excellence for Biosensors, Instrumentation and process Control	Private research institution
2992	EN-FIST CENTRE OF EXCELLENCE	Private research institution

CIPKeBiP Membership

Name	ARRS code	Research area	Position
Dr. Boris Turk	07561	Biochemistry and molecular biology	Researcher
Dr. Eva Žerovnik	03368	Biochemistry and molecular biology	Researcher
Dr. Dušan Turk	04988	Biochemistry and molecular biology	Researcher

Name	ARRS code	Research area	Position
Dr. Bistan Žist Mirjana	29489	Microbiology and immunology	Researcher 2013
Dr. Džeroski Sašo	11130	Computer science and informatics / Intelligent systems - software	Researcher 2013-2016
Dr. Fonović Marko	18801	Biochemistry and molecular biology	Researcher 2013
Dr. Galeša Katja	18284	Biochemistry and molecular biology	Researcher 2013
Dr. Janež Nikolaja	33406	Biotechnology / Bio-engineering	Researcher 2015-2016
Dr. Kosec Gregor	22312	Biotechnology	Researcher 2013-2016
Dr. Kuščer Enej	23483	Biotechnology / Recombinant DNA technology	Researcher 2013-2016
Dr. Makuc Damjan	24975	Chemistry / Organic chemistry	Researcher 2013-2015
Dr. Mavri Jan	21244	Pharmacy	Researcher 2014
Naglič Tina	35029	Microbiology and immunology	Researcher 2014
Dr. Petković Hrvoje	13542	Biotechnology / Recombinant DNA technology	Researcher 2013-2014
Dr. Plavec Janez	10082	Chemistry / Structural chemistry	Researcher 2013-2016

Dr. Rajković Jelena	34212	Biochemistry and molecular biology	Researcher 2014-2016
Dr. Rikanović Tanja	37161	Microbiology and immunology	Researcher 2014-2016
Dr. Rupnik Maja	12278	Microbiology and immunology	Coordinator 2013-2016
Dr. Strle Franc	13301	Microbiology and immunology	Researcher 2013-2014
Dr. Šket Primož	22575	Chemistry / Structural chemistry	Researcher 2016
Dr. Šmuc Tina	25593	Metabolic and hormonal disorders	Researcher 2013
Dr. Turk Boris	07561	Biochemistry and molecular biology	Researcher 2013-2016
Tušar Jasmina	37945	Biotechnology	Researcher 2015-2016

Abstract

Clostridium difficile and Staphylococcus aureus, both important pathogens causing significant burden in health care system, will be used as model organisms to study microbial factors that might be associated with increased virulence.

Different approaches will be used to define differences between clinical isolates with higher and lower virulence, defined as S. aureus causing endocarditis-associated vs. bacteremia and C. difficile causing diarrhoea vs. colitis or pseudomembranous colitis.

Comparative analysis of secreted factors and bacterial cell wall bound fractions in each bacterial species grown under different conditions will be assessed by mass spectrometry-based proteomic approaches. NMR will be used as a complementary technique to study the possible differences in selected virulence factors due to posttranslational modifications.

Aptamers are in vitro engineered nucleic acids selected from complex libraries of synthetic nucleic acid by an iterative process called SELEX. They can be generated against functional groups, small molecules (e.g. amino acids, proteins) and even whole organisms (e.g. bacterial cell). Development of aptamer-based assay for detection of differences between strains associated with mild or severe disease will be another approach used in this project.