DEAR COLLEAGUES,
WE KINDLY INVITE YOU TO THE
INTERNATIONAL PRACTICAL AND SCIENTIFIC SEMINAR

THEORY AND PRACTICE OF DECISION-MAKING IN EPIDEMIOLOGY

which will take place at

the House of Knowledge, University of Latvia
(Zinātņu Māja, Latvijas Universitāte, Jelgavas iela, 3, Rīga)

on

April 24, 2024

The goal of the seminar is to present modern tools aimed at making informed decisions in public health, share the experience of solving the urgent problems of public health in Latvia and Baltic countries and discuss the current challenges.

The seminar is tentatively scheduled as follows:

1. A mini-course by Drs. E.O. Romero-Severson and D. Gromov (see the other side).

   Coffee-break

2. Presentations by the participants (to be detailed later on).
3. A panel discussion.

➤ Please confirm your participation by filling out this form.

The seminar is organized by the Departments of Mathematics and Medicine of the University of Latvia with the financial support of BAFF – Baltic-American Freedom Foundation.

The event will be held in English. Participation in the seminar is free for registered participants.

Mini-course:

DYNAMIC TRIAGE OF LIMITED PUBLIC HEALTH RESOURCES: MODELS AS TOOLS FOR MAKING REAL-WORLD DECISIONS

Ethan O. Romero-Severson, senior scientist, Los Alamos National Laboratory, NM, USA.
Dr. Romero-Severson is widely recognized as a leading specialist in the field of theoretical epidemiology, with an emphasis on the interplay of within-host and population-level dynamics of diseases as well as genotypic and phenotypic virus variability. He has authored or co-authored more than 50 papers, particularly the recent report on SARS2, which was cited more than 1800 times according to Google Scholar.

Dmitry Gromov, senior researcher, University of Latvia.
Dr. Gromov's work is centered around applied mathematics and its application to a wide range of real-life problems ranging from epidemiology and population dynamics to resource economics. He is an author or co-author of more than 50 publications.

The academic literature on infectious disease epidemiology has a gap in how theoretical models and mathematical methods should be used to make real-world decisions on public health intervention. The SARS2 pandemic proved this point with the deluge of papers claiming to measure the effects of alternative interventions using different models, different methods, and, unsurprisingly coming to different, often incompatible, conclusions. Yet, the effect all of that scientific effort on policy or decision-makers is debatable. What we need is an integrated science of pandemic decision support that starts with real public health questions, recognizes the fundamental limitation of resources, and respects the mathematical complexity of the non-linear dynamics of disease transmission. Drs. Romero-Severson and Gromov have a long running collaboration that aims to bring methods from theoretical epidemiology and optimal control theory to real-world problems. Recently they have been collaborating with the US Centers for Disease Control and Prevention on building frameworks for modeling the real costs of public health interventions and dynamically allocating limited public health resources to maximize public health benefit. They will discuss the conceptual aspects of how mathematical models are used in public health, how to define a real-world question in terms of a mathematical model, how to use numerical methods to find complex trade-offs between different interventions, and how these systems work in practice.

Outline of the course:
Part 1: A brief introduction to mathematical modeling in epidemiology.
Part 2: Description of the real-life problem statements.
Part 3: Computation of dynamic optimal control policies: an introduction.
Part 4: Practical application of the developed method to a wide range of diseases (gonorrhea, HIV, etc.) An overview of the obtained results and future perspectives.