Mathematical Modeling of Biological Systems and Infectious Disease Using

Win**SAAM**

A series of Workshop Meetings to Quickly get up to speed Modeling with WinSAAM Oct. 2020

WinSAAM is a program to assist you with the exploration of Biomedical Data using models. Its name comes from 1) 'Win'dows where is originated, and 2) The processing core of WinSAAM, called 'SAAM' which has been around for many years and has offered support in the publication of many hundreds of scientific articles by investigators like you.

There will be 10 modules in this WorkShop (WS) series … starting with 'Why and How WinSAAM Functionally Evolved' (the first Workshop), and concluding with 'Interoperability Using WinSAAM' (how WinSAAM does not abrogate your efforts to address any challenges). The module presentations will be at the rate of 1 per week, and will be of 1 hour duration each. Each presentation will start with a didactic component, and conclude with a selection of topical demonstrations … quite possibly, as we move along, of your own choosing.

Presented by:

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Venue: Zoom

Requirements: Windows PC Computer or a virtual instance of one.

We hope to see you zooming along with us and WinSAAM!

Topics Covered*

1. The nature of the WinSAAM software, its capabilities and its mode of operation
2. Demonstrations of some basic WinSAAM models reflecting how common problems are addressed.
3. A second tier of problems tackled using WinSAAM models. Here we would welcome your own contribution to our material so that our WS will have a best possible relevance for you.
4. The flexibility of WinSAAM will be demonstrated as we tackle 3 different versions of a model to describe a metabolic response of a system to a challenge.
5. Missing and damaged data are perennial problems of kinetics and in this session we will show how Kinetic Analysis affords us new approaches to Data Imputation using Macro Rate Constants.
6. Surgeons, anesthetists, and nutritionists all need access to PK/PD tools to help plan and interpret clinical interventions. The WinSAAM software has convincingly demonstrated its facility here where we have solved the 200 or so Kinetic Investigations in the PK/PD book by Gabrielsson and Weiner (4th Edn.).
7. A set of 6 PK/PD studies from G & W will be solved demonstrating a variety of new approaches
8. WinSAAM and SAAM routinely play a world-wide role in Energy Metabolism and each has been used as the core in current versions of MinMod Millennium and the Dall Man OGTT model. Here we show how the WinSAAM array of tools render the program amenable to these settings. A pivotal invention in the history of WinSAAM's evolution has been its susceptibility to Automation of Aspects of modeling projects. We will show how users can become handy with the use of this approach.
9. Infectious Disease Epidemics. Never has the time been more poised for the exploitation of models to follow, monitor, and control the spread of infectious diseases. Here we show how variants of the SIR model (attributable to Kermack, and McKendrick, 1927) can be explored and manipulated using just 2 or 3 WinSAAM modeling constructs.
10. Probably the greatest advance in the use of WinSAAM has been its demonstrated capacity to run seamlessly with other high-powered statistical modeling software. In this session we will demonstrate the simplicity of access to this WinSAAM setting and we will encourage attendees to bring their research data along so that we can bring this advance to the relevance of our meeting.

Major Content of Topics Covered

1. October 15, 2020 12:00 PM – 1:30 PM: Introduction to Presenters and Background to WinSAAM

2. October 22, 2020 12:00 PM – 1:30 PM: Overview of Modeling with WinSAAM

3. October 29, 2020 12:00 PM – 1:30 PM: Getting Started using WinSAAM

4. November 5, 2020 12:00 PM – 1:30 PM: Three Challenge Models of Lactate Disposition

5. November 12, 2020 12:00 PM – 1:30 PM: The Utility of Macro and Micro Disposition models

6. November 19, 2020 12:00 PM – 1:30 PM: Protocol and Response Specification for PK Systems

7. December 3, 2020 12:00 PM – 1:30 PM: The Minimal Glucose Models

8. December 10, 2020 12:00 PM – 1:30 PM: Project Management from the WinSAAM Console

9. December 17, 2020 12:00 PM – 1:30 PM: Infectious Diseases Modeled with WinSAAM