

Biomedical System Dynamics SIG: Annual Report 2012

The Biomedical SIG was officially created on Feb 3, 2012, and we look forward to its growth and development for many years to come. We thank the members of the Policy Council for their recognition and support.

Leadership Commitment:

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3. Membership Commitment:
 1. Jim Rogers
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 3. Louis Macovsky
 4. Geoff McDonnell
 5. Diana Fisher
 6. Wayne Wakeland
 7. Mark Paich
 8. Ozge Karanfil
 9. Craig Hocum

Purpose:

Vision Statement: The Biomedical SIG will focus on understanding of the basic biomedical sciences (physiology, biophysics, pharmacology, biochemistry, and others), with three long-term goals in mind:

1. The development of a core set of models (and teaching materials) to serve as a foundation for the study of biological dynamics.
2. The incorporation of ST/SD into everyday practice within laboratory and clinical research environments.
3. The translation of resulting new insights into practical and effective clinical protocols.

Activities to Date:

Since the inception of the SIG, Ozge Karanfil has kindly undertaken to create a group on LinkedIn named "Biomedical System Dynamics Special Interest Group". To date 25 practitioners have enrolled in the group and offered some initial comments. The intent of the LinkedIn group is to facilitate our worldwide communication concerning action items that arise out of the 2012 conference.

If you are interested in joining the group, please contact Ozge Karanfil (karanfil@MIT.EDU). Many thanks Ozge!

Formational Activities Prior to the Founding of the SIG:

As reported in the proceedings of the 2011 conference, an organizational meeting was held to assess the interest and scope of the SIG we had in mind. The discussion we had in that meeting among 16 participants (Tom Cavin, Warren Farr, Ed Gallaher, Yrjo Tapio Grohn, Craig Hocum, Ozge Karanfil, Meyer Katzper, Peter Lacey, Thomas Moore, Nate Osgood, Jim Rogers, Karl Rogers, Nasim Sabounchi, Marek Susta, Wayne Wakeland, and Robert Wears) was focused upon potential areas of application in which biomedical system dynamics might prove fruitful. The group identified the following 19 potential areas repeated, here for your convenience:

- Immunodynamics
- Cancers/autoimmune disorders
- Drug delivery systems
- Pain management
- Individual psychiatric interventions
- Addiction physiology
- Sleep disorders
- Stress response
- Weight dynamics
- Chronic disease progression
- Alternative and complimentary medicines (CAMS)
- Receptor dynamics
- Body fluid electrolytes
- Developing clinical applications
- Teaching pharmacokinetics using ST/SD
- Integrating BPSD in Continuing Medical Education
- Adverse drug events
- Antimicrobial resistance
- Food borne pathogens

The results of the 2011 meeting, namely the participants and the areas of potential application, together with the commitment of the nine members listed above comprised the substance of our request for formal recognition to the Policy Council.

Planned activities for the 2012 conference in St. Gallen:

We will participate in the chapter and special interest group poster presentations on Monday morning to explain more about the group and answer questions about its purpose.

On Tuesday afternoon at 12:30 we will conduct a two-hour meeting entitled *Biomedical Roundtable and First Biomedical SIG Annual Meeting*. As explained in the conference schedule, the purpose of this meeting is to prioritize the activities the SIG will conduct over the next year and outline our methods of operation.

As an additional goal of the meeting on Tuesday, we would like to develop a project assessment template which could be used to create a uniform view of the initial areas of interest we have already identified as well as future areas of interest that will emerge. The template might contain, for example, questions such as these:

- Has this area already been explored using system dynamics methodologies? If so, who are the main contributors and what is the state-of-the-art in the field? What are the remaining questions to be addressed?
- If it appears that this area has not been explored using system dynamics methodologies, what are the key dynamic issues to be addressed? Is there a short list of reference behavior patterns that call for dynamic hypotheses concerning effective policies?
- Is there a potential group of users of practical, operational models? How would such models be used to improve care delivery? What are the current and future demographics of such a group of clinical practitioners and patient populations?
- Can a reasonable assessment of the value of practical applications of system dynamics in this area be made?
- Might the data for model building actually be available?
- If a project in this area were to be undertaken, what would be the sources of funding?
- Who are the external (external to the System Dynamics Society) investigators or practitioners who might become interested in collaborating with system dynamics modelers in this area?
- Etc.

Answers to questions such as these would serve to form workgroups and the SIG's priorities for specific projects to undertake.