



Bob Eisenberg <bob.eisenberg@gmail.com>

Great Chatting at Biophysics

Bob Eisenberg <bob.eisenberg@gmail.com>

Sun, Mar 8, 2015 at 8:39 AM

Reply-To: bob.eisenberg@gmail.com

To: JACQUELINE C TANAKA <jtanaka@temple.edu>, lucie delemotte <lucie.delemotte@gmail.com>

Cc: Vincenzo Carnevale <vincenzo.carnevale@temple.edu>, "Bob Eisenberg beisenbe@rush" <beisenbe@rush.edu>, Ardyth at Gmail <ardyth.eisenberg@gmail.com>, Mike Klein <mike.klein@temple.edu>

Dear Jackie

How nice of you to make such a fuss!
But unnecessary. I will enjoying being with
you (all) for your sakes as well as being with
Mike and Enzo and Lucie, who started it all,
and others whom I have forgotten to mention.

Sunday April 5 would work well for me.
After we have details worked out, I will let you
know what flight times work best for me so
I can accomodate my addiction to the Barnes
and infatuation with the PMA, and maybe
sneak in a concert with the Orchestra.

About the seminar with math:
mathematicians are now discovering that
biology provides a massive buffet of treats,
like one of those enormous indigestible buffet
meals on a cruise ship (I am told) or in Communist
Hungary (as I remember, but there for breakfast,
with nothing available for dinner, at least in Budapest).

And investigating the dishes randomly is important
and productive because math can add a lot to many
PROVIDED it works in the experimental descriptive

context and actually attacks questions of biological interest.

But I would like to make the case that one of the central traditions of biology is in essence mathematical. That is the approach of British biology since Harvey (so we were taught) of looking for simplified systems in natural biological systems, that in fact can be analyzed as devices, in the precise engineering sense of that word. In fact, physiology (which is the old fashioned name for this biological tradition) is much much older than engineering, and has always looked for systems with inputs, outputs, and simple relations between the two.

I would argue that this quest is aided immeasurably by mathematics, now that math knows how to describe the physics of interacting systems ('everything interacts with everything else' as in almost all ionic solutions, as a central fact of experimental physical chemistry), which include dissipation and combine migration and diffusion and convection (and sometimes heat flow).

I would argue that finding the relation between input and output is the quintessential "dimensional reduction problem" (to use the jargon of math and a SIAM meeting I am going to in a few weeks) that should be addressed most productively by the methods of inverse problems. (These actually work: Martin Burger and Heinz Engl-- now Chancellor or Emperor or something or other of the University of Vienna--showed me how to actually determine by math the distribution of permanent charge--acid and base groups--

within an open channel).

So this approach might interest the math people,
but the key is of course to have them work on
problems of biological interest and to actually
get answers that can help understand and
design experiments AND NEW DEVICES
and fix diseased devices as well.

As ever
Bob

As ever
Bob

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New hospital tower at Rush



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On Sun, Mar 8, 2015 at 7:48 AM, JACQUELINE C TANAKA <[jtanaka@temple.edu](mailto:jtanaka@temple.edu)> wrote:

Hi all,

The week you propose is great. We'll be ready! I want to talk with Isaac Klapper in math and see if we might host a joint math/bio seminar.

<https://www.math.temple.edu/~klapper/>

Once we set the seminar day/times we can plan the other activities. I think I mentioned that it would be nice to have a dinner here for everyone to socialize. I would like to have families included with children if possible and in that case, it would be best if we could have it early Sun evening. Just a thought because it would mean that you (Bob) would have to come early Sun afternoon as I assume you would want to be home by the next weekend.

So Enzo, just let me know what you work out in terms of days/times. I'm glad to have something to look forward to after the long winter!

Best,  
Jackie

On Sat, Mar 7, 2015 at 3:05 PM, Bob Eisenberg <[bob.eisenberg@gmail.com](mailto:bob.eisenberg@gmail.com)> wrote:

Dear Enzo

I am coming to work with you all! So that comes first, and FIRST, and **FIRST**  
I enjoy the dignified as much as the next guy, but this is about the efficient  
(Mike will explain the quotation from Bagehot, if it is new to you)

Let me know when and how long you would like me to stay. I am free all week.

On the personal side, I will definitely go to the Barnes and the PMA at least once, and will go to the Symphony if the dates permit.

On the lecturing side: I like to talk (you may have noticed, you encourage me at your peril) and I have lots of slides lying around, so I can lecture as you and Jackie wish.

As ever  
Bob