

Lessons from host-pathogens interactions

Oriana Rossi

The last crosstalk workshop, "Lessons from Host-Pathogens Interactions", organized by **Maria Rescigno** with the help of **Sabrina Frata** and **Quitterie Duputel-Bonnemaison** was held in the European Institute of Oncology in Milan. The workshop focused on the interactions between pathogens and host and on the differences and similarities between pathogen and commensal microorganisms. Talks from renowned scientists and young researchers alternated. In addition, the participants had the opportunity to discuss their work during the poster session.

Jerry Wells (Wageningen University, the Netherlands) and **Philippe Sansonetti** (Pasteur Institute, Paris, France) set the scene in the introductory talks, describing the molecular basis of commensal and pathogen lifestyles and their behaviour at the mucosal surfaces. Then, **Francois Leulier** (IBDML, Marseille, France) discussed the interactions between microbes and the host model organism *Drosophila melanogaster*, **Luigina Romani** (University of Perugia, Italy)

described the interactions between the host, the microbiota and the fungus *Candida albicans* and **Thierry Soldati** (University of Geneva, Switzerland) described the interactions of pathogenic mycobacteria with the amoeba *Dictyostelium*. The next day, we attended the talks of **Stéphane Meresse** (CIML, France) focusing on the role of effectors proteins in *Salmonella* pathogenesis, and **Pietro Mastroeni** (University of Cambridge, United Kingdom) describing the dynamics of the interactions between pathogens and host immune system. **Arlette Darfeuille-Michaud** (University of Clermont-Ferrand, France) described the work of her group on Crohn's disease-associated adherent-invasive *Escherichia coli* and **Christoph Tang** (Imperial College, London, United Kingdom) presented a lecture entitled "Breathing life into intestinal pathogens". The last day, **Thomas Henry** (INSERM, Lyon, France) described his studies on the inflammasome, a key antibacterial innate immune defence.

During the workshop a board represented by **Aat Ledebøer** offered a prize for the best presentation and the best poster:

Congratulations to Krzysztof Regulski for the poster price!!

If ever you read the crosstalk newsletter: **Congratulation also to Mariangela Cavarelli for the presentation price!!**



CROSS-TALK WORKSHOP
 LESSONS FROM HOST-PATHOGENS
 INTERACTIONS
 Milano (Italy) – April 28-29, 2011



Lessons from host-pathogens interactions

Oriana Rossi

Something about our host

The workshop was held in the IFOM-IEO campus in Milan, a biomedical research centre, created by the joint efforts of the FIRC Institute of Molecular Oncology Foundation (IFOM) and the department of experimental oncology of the European Institute of Oncology (IEO). The two Institutes form the biggest European oncological research pole. The campus hosts a total of 40 research groups and some 500 scientists, one third of whom are foreigners.

The campus, hosts scientists investigating the most advanced frontiers of cancer-related research, with a marked focus on the transferability of research. Researchers working in different fields of research including inflammation, immunology and microbiology, functional genomics and structural biology work in close interaction.

Impressions from the fellows

The presentation of **Mariangela Cavarelli** (San Raffaele scientific institute, Italy), PhD student working on recognition of HIV by dendritic cells (DCs), gave me some ideas on assays that could be applied to my work. In particular, Mariangela, with the collaboration of Maria Rescigno, performed an *in vitro* assay using DCs co-cultured with epithelial cell monolayer. I found this approach very interesting and I think it could be useful to demonstrate that the invasive recombinant *Lactococci* constructed during my PhD can be sampled by DCs extending their dendrites through an epithelial cell monolayer. Marcela

The presentation of **Philippe Sansonetti** was directly related with my PhD work which I thought it was very interesting. The dilemma between commensal and pathogenic bacteria, commensal that could become "pathogenic" or pathobiont and their capacity of up-regulated anti- and pro-inflammatory genes with consequent production of cytokines and chemokines. In this point of view his talk was very useful for me and gave me some ideas for future experiments. Vanessa

One of the nicest moment in Milan was the opportunity to "chat with the professor" (**Christoph TANG**) during lunch time. We manage to not talk exclusively about science; we discussed issues of today's young researchers and "the role of supervisors in PhD students lives". Gosia and Dragana



The IFOM is a research institute dedicated to the study of the molecular mechanisms underlying cancer formation and development.

The IEO is an independent, non-profit biomedical research institution and cancer centre. The institute is active in the areas of clinic, research and training.

In addition to providing patients with the best care available, IEO is committed to cutting-edge research in oncology, ranging from basic to translational research and clinical trials. The IEO was conceived by the surgeon and oncologist **Umberto Veronesi** and inaugurated in May 1994.

Some information were taken from www.ieo.it

I was quite excited to have the opportunity to listen to the presentation made by **Ariette Darfeuille-Michaud** and talk to her. Her work on Crohn's disease-associated adherent and invasive *Escherichia coli* LF82 was remarkable. As I am also putting my effort on disease-associated *E. coli*, her work inspired me and brought me a new horizon into this field. Besides, the lunch time with **Philippe Sansonetti** was beneficial to me because he pointed out how important it is to do a post-doc for someone who wants to dedicate his/her career in science. Dudu

The presentation of **Philippe Sansonetti** about pathogens and commensals at the mucosal surfaces was very interesting since the topic is relevant to my own research. The presentation made me understand better the immunity aspects of the topic and gave me an idea of the role and mechanisms of pathogens in the mucus layer. I also had the opportunity to have lunch with him and discuss not only his research on *Shigella*, but also more general things concerning the research world. Noora

In the Crosstalk workshop in Milan I had the occasion to know and speak with **Francois Leulier** who is studying the gut microbiota of *Drosophila melanogaster*. Thanks to this opportunity we established the first contacts for a future possible collaboration between his group and the HMI group. Oriana

Impressions from the outside

Katerina Tsilingiri

In every Crosstalk meeting, some students that do not belong to the Crosstalk project can get grants for participating. We asked them to give their opinion about the Crosstalk project and the workshop, here some of their comments

One of the best things about CT is that the network gives the opportunity to fellows not directly related to the project to attend the meetings organized. This is good not only for them, but also for us, as this way we have the possibility of asking the opinion of "third parties" on the CT initiative and the work carried out by fellows and supervisors likewise. Indeed, during the Milan meeting this is what we did: we addressed a couple of questions to each of them, to be answered in an anonymous fashion. The questions we asked were:

How do you see the CT program and fellows from the outside and what is your opinion on the whole initiative?

How do the projects of the CT program relate to your own work? Do you see possibilities for future collaborations with the CT fellows?

We are glad to report that all feedback we received was quite positive, as many of our "guests" found the network "interesting and stimulating" and "the people

involved very nice" whereas one of them states "I will recommend the CT workshops to the people in my Campus." Interestingly, however, one of the invitees detected at times an atmosphere of elevated competition and states that with a "more relaxed and less competitive environment" meetings could be much more fruitful and pleasant!

Almost all the invited fellows work on projects that are in some way or other related to the CT network, but even those that aren't were quite attracted by the field, and even mention "I will think about a post doc on commensal bacteria and relationship with the host". It is good to know that our research appeals to young scientists with not so much experience in the field! Other fellows mentioned that this meeting was a delightful opportunity to come up with some ideas for their own projects, and that they very much enjoyed "being able to converse with excellent scientists and obtain their opinions and ideas".

To sum up, we are confident that the CT network does not only look like a worthy initiative to those partaking, but also to people seeing it with a more objective eye from the outside.

Some interesting publications

- ✓ Gerritsen J et al., de Vos WM. Intestinal microbiota in human health and disease: the impact of probiotics. *Genes Nutr.* 2011 May 27.
- ✓ Miquel S et al., Darfeuille-Michaud A. Role of decreased levels of Fis histone-like protein in Crohn's disease-associated adherent invasive *Escherichia coli* LF82 bacteria interacting with intestinal epithelial cells. *Journal of bacteriology* 2010; **192**(7): 1832-1843.
- ✓ Bielaszewska M et al., Karch H. Characterisation of the *Escherichia coli* strain associated with an outbreak of haemolytic uraemic syndrome in Germany, 2011: a microbiological study. *The lancet* 2011 (11)70165-7.
- ✓ Meijerink M, et al., Wells JM. Identification of genetic loci in *Lactobacillus plantarum* that modulate the immune response of dendritic cells using comparative genome hybridization. *PLoS One* 2010; **5**(5): e10632.
- ✓ Reikvam DH, et al., Johansen FE. Depletion of murine intestinal microbiota: effects on gut mucosa and epithelial gene expression. *PLoS One* 2011 Mar 21;6(3):e17996.



How to review an article

At some point in our career, after the first publications, we will be asked to review and judge the work of someone else. To review an article is an honour since it means that you are considered expert in your field. It is time consuming but also important for the scientific community and a very good opportunity for a young researcher. Here some advices that I found in a publication about scientific publishing (see reference below). I hope they will be useful. Oriana Rossi

The etiquette of reviewing:

"When asked to review a manuscript carefully assess its scope and focus to determine if you are truly qualified to provide a good assessment".

"Be a timely reviewer. Remember how agonizing it is to wait for reviews. When you read the manuscript for the first time, start with the assumption that it will be a good manuscript. Do your homework, brushing up on the subject and researching the latest literature. Be sure to provide complete reference information".

Opinion vs. Bias:

"You must carefully guard against letting your biases unrelated to the science cloud your judgment".
 "Review what you know. Use your expertise".

Conflicts of interest:

"In deciding whether you are qualified to review a manuscript, be sure to look carefully for any conflicts of interest. If you recognize a potential conflict of interest, decline or alert the editor".

A professional tone:

"Professionalism in the review process is essential. The

reviewer's anonymity does not give one license to be mean. Avoid personal or disparaging comments. Do your best to give constructive criticism, the kind you expect from your own reviewers". "Be clear in your comments to the authors".

The issues:

"Sometimes serious problems arise during a review. Unfortunately, misconduct does occur. Be on the look out for the use of previously published data without attribution and plagiarism of previous publications, including those of the authors".

"You should include within your review suggestions for how to improve a paper.

The peer-review process must remain confidential to protect authors' ideas and data. Do keep the manuscript to yourself. Do not alert potential competitors to the existence of the paper, and, under no circumstance, share any of the findings".

"In short, review the way you hope everyone else is reviewing your manuscripts!"

From:

Scientific Publishing: Dos and Don'ts for Authors and Reviewers. How to Be a Valued Reviewer, JoAnne L. Flynn, Ph. D., the AAI Newsletter, November 2009–May 2010

ADDRESSING REVIEWER COMMENTS

BAD REVIEWS ON YOUR PAPER? FOLLOW THESE GUIDELINES AND YOU MAY YET GET IT PAST THE EDITOR:

<p>Reviewer comment: "The method/device/paradigm the authors propose is clearly wrong."</p> <p>How NOT to respond: ✗ "Yes, we know. We thought we could still get a paper out of it. Sorry."</p> <p>Correct response: ✓ "The reviewer raises an interesting concern. However, as the focus of this work is exploratory and not performance-based, validation was not found to be of critical importance to the contribution of the paper."</p>	<p>Reviewer comment: "The authors fail to reference the work of Smith et al., who solved the same problem 20 years ago."</p> <p>How NOT to respond: ✗ "Huh. We didn't think anybody had read that. Actually, their solution is better than ours."</p> <p>Correct response: ✓ "The reviewer raises an interesting concern. However, our work is based on completely different first principles (we use different variable names), and has a much more attractive graphical user interface."</p>	<p>Reviewer comment: "This paper is poorly written and scientifically unsound. I do not recommend it for publication."</p> <p>How NOT to respond: ✗ "You #@%* reviewer! I know who you are! I'm gonna get you when it's my turn to review!"</p> <p>Correct response: ✓ "The reviewer raises an interesting concern. However, we feel the reviewer did not fully comprehend the scope of the work, and misjudged the results based on incorrect assumptions."</p>
--	--	--

JORGE CHAM © 2005

www.phdcomics.com

Did you know?

Katerina Tsilingiri

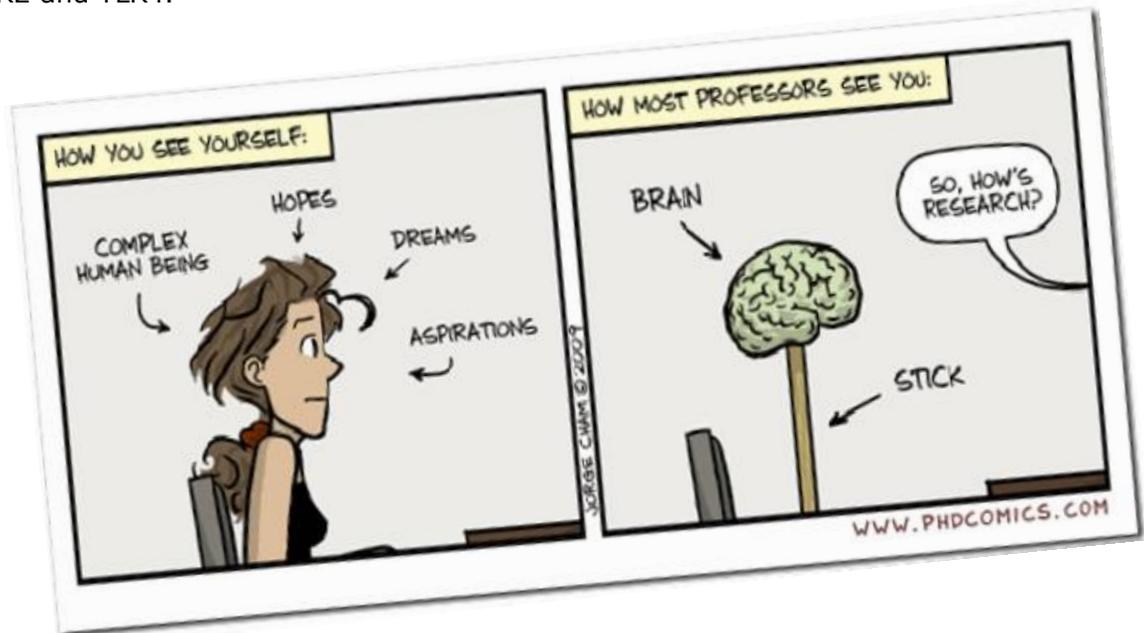


- ✗ Food takes approximately 24 hours to become entirely digested
- ✗ The HCl daily produced by the stomach is about 2 liters
- ✗ A human intestine is roughly 7-8 meters long, whereas the intestine of a horse reaches around 27 meters in length
- ✗ Total surface of human intestine: 200m² = about half a basketball court. Total surface of human skin: 6m²
- ✗ The total amount of commensal bacteria in a human body weighs more than the average brain does



Louis Pasteur, whose pioneering experiments clearly demonstrated the role of microbes in the transmission of disease, developed an obsessive fear of dirt and infection. He refused to shake hands, carefully wiped his plates before dining, and, on more than one occasion, astonished friends at dinner parties by producing a portable microscope to ensure that the food they were serving was fit for human consumption.

- ✗ Stress hormones like corticosterone, epinephrine and norepinephrine do indeed reduce immune system efficacy: they suppress the response of macrophages by down-regulation of TLR2 and TLR4.



Design: Oriana Rossi
 Editors: Oriana Rossi and Katerina Tsilingiri