2006 Cancer Biology Training Consortium Meeting

Summary:

The 2006 Cancer Biology Training Consortium Meeting was held at the Asilomar Retreat Center in Monterey, California from October 27th-29th. The basic idea for this meeting was to organize and provide a means of interaction between cancer biology program directors and (new this year) pre-doctoral students. The meeting was well attended by 41 faculty members and 22 student members from all over the country. Special non-academic attendees included individuals from Jackson Labs and the National Cancer Institute (NCI). This two-day retreat included the separation of attendees into five basic groups, to discuss specific issues relevant to a cancer biology training program and report back to the entire group in a concise manner. These groups, their primary objectives and their reports are outlined below. Action taken from this meeting includes interaction with grant supervisors at the NCI, primarily on the matter of T32 application format and submission of a "white paper" to make recommendations on the components of a successful cancer biology program. The text that follows is essentially the long-handed notes of the proceedings and general impressions of the discussions attended by all attendees. This includes statement of 2005 consortium conclusions, description of break-off groups and their summary statements and a transcript of the discussion between the Consortium and the NCI representatives sent to discuss recent changes and concerns with grants.

Submitted by Alix Norris

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A. Consortium Objectives (concluded from 2005 Inowa Island, NC meeting)

1. To be a voice that can speak conclusively about pre- and postdoctoral training in cancer biology
2. To define the field and intelligent space of cancer biology
3. To outline the core elements and requirements of cancer biology training
4. To dialogue with the NCI
5. To work within the group to share information pertaining to training and innovation

B. List of Break-off Groups and Final Objectives

Group 1: *Cancer Biology Curriculum*
- Determine what an effective, required core curriculum should be, without limiting creativity or diversity

Group 2: *Translational Research in Cancer Biology*
- Discern how PhDs can participate in translational research and to make a stated list for Dr. Matresian's "white paper" to the NCI

Group 3: *Survey of Cancer Biology Training*
- To document the variations in current cancer biology curriculum and programs

Group 4: *Cancer Biology Training for MD's: the Medical School Curriculum*
- Determine how to train physicians and biologists in cancer biology
- Define curriculum and make recommendations for basic science for medical students

Group 5: *Organizational Issues for CB Chairs and Program Directors*
- Define a structure to this consortium so we can communicate an organized entity on the national level

C. 2006 Summary Statements From Each Group

Group 1: *Cancer Biology Curriculum*
- Basic science core courses should include: genetics, cellular biology, cellular signaling and biochemistry.
- Electives could be supported to include cancer pathology and treatment, etc.
- A core cancer biology fundamentals course should include: histopathology, tumor genes, invasion, metastasis, immunology, gene/targeted therapy, DNA damage/repair, human diagnosis/treatment, cancer virology and bioinformatics.
- To "give a face to cancer", students should attend tumor boards or grand rounds, shadow clinicians, have MDs present their lectures and assign an MD to their committees.
- Additional work should include the interaction within a journal club, work-in-progress seminars, seminar series attendance, lab rotations, ethics classes, scientific writing class or experience and numerous opportunities for oral presentations.

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- Career opportunities could also be an added benefit that would strengthen the predoctoral training.
- The preliminary examinations should start to be based more and more on general problem solving techniques and knowledge fundamental to the dissertation project.
- In order to facilitate technique development, a techniques class can be taught in-house or can be fulfilled by attending national workshops.

Group 2: *Translational Research in Cancer Biology*

- Definition of translational research (by NIH): a clinical application event. This group concluded that ~20% of researchers are doing translational research already.

First Problem: How to get students/postdocs more clinically involved?

→ Ultimately want to get more of a symbiotic relationship established between MDs and PhDs. Recommendations on how to do that:

- By co-mentoring assignments of clinical staff, more translational-based courses and implementation of targeted discovery courses and epidemiology
- Need a change-of-culture to get clinicians and PhDs together in basic science programs, who are not already a part of cancer centers
- Students need to be exposed to complexity of diagnosis/treatment, but need to maintain scientific rigor in programs.
- Need to promote teamwork mentality and give both sides an advantage for the collaboration
- Need to develop incentives for clinicians to interact with MDs and vice versa.

Second Problem: Collaborative MD/PhD relationships are being hindered by time restraints of MDs and MD participation in PhD cancer biology training is essential.

- Perhaps buy the MD's time to mentor the PhD (K award? CCSG grants?)

Notes on Consortium Discussion that Followed:

- *Topic 1:* Grad students should be *exposed* to translational research, but that shouldn't be the basis for their dissertation because that kind of research is too big and requires the interaction of a group of people.
    - Per haps the project can encompass a portion of the translational project, but that will still allow them to be exposed to the process.
    - Concern was expressed at the high-risk problem of translational research, both to trainees *and* new investigators.
    - Conclusion: Translational research projects should be attempted by larger, established labs or groups of labs and graduate projects should only encompass a specific focus of the larger goal.

- *Topic 2:* Perhaps a "translational class" should be offered.
    - Miami offers a new class that talks about how a particular therapy was developed (from the bench) and then the students get a clinical lecture by an MD about how that therapy is implemented in the clinic.

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Group 3: *Survey of Cancer Biology Training*

- This group analyzed the survey for what kinds of cancer biology programs are out there. They found there is a range, anywhere from degree-granting to "focus" programs.
- They modified the questions of the survey to ask about existing and potential cancer biology programs (e.g. organization of program, where funding comes from, labels of programs, etc.)
- This survey will be distributed nationally to identify the programs & people who are not currently represented at the Consortium.

Group 4: *Cancer Biology Training for MD's: the Medical School Curriculum*

Problem: There is a fragmented curriculum in medical school. It is currently not acceptable to have such a limited knowledge, since cancer is so prevalent in the current population.

Points of Recommended Change:

- Need to assess and survey basic knowledge of the current medical student: Incoming knowledge can be variable. Up to 20% can be peripheral to biology and some even have Ph.D.s in biology, so there is a need to assess knowledge and success through this program.
- "No medical student left behind":
  - Medical school is too test oriented and rooted in memorization. We don't even know who makes the questions for the board exam. This group should help to influence the knowledge that is tested on a national level.
  - This group should support a 3rd year of research to increase laboratory knowledge. Students become disoriented in MD/PhD programs because they are forced to swap back and forth between medicine and lab. How can we facilitate more functional movement?
  - The medical school curriculum should include the following 4 main areas: Cancer Genetics/Epigenetics, Environmental Modifiers/Toxicology, Integrated Cancer Biology (stem cells, signaling, etc) and Cancer Therapeutics strategies. This group has a power ability to affect curriculum positively.
- Cross-training could be a short-term answer (e.g. journal clubs, grant preparation, problem solving) and expands interaction.
- There is a need to define the measures of success, such as career choices, the paper trail (grants, publications), better interactions with industry and ultimately better patient outcome.
- Also need to define cancer as a chronic disease instead of a curable one.

D. Dialogue Between Consortium and NCI Representatives

- Discussion about 3:1 (postdoc/student) requirement on T32
  - *NCI Reasoning*: Believe that postdoc projects carry more successfully into faculty positions, so this action would facilitate research in cancer, much more than a researching student might. This belief was founded by 1999 commission and the data supporting this cannot be located by the representatives and is not disclosed.

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- *Group Concerns*: We cannot argue against data that "is not known" and will do anything it takes to provide the NCI with the information they require to make a more informed decision.
- Conclusion: T32 submissions should take extra effort in their "tables" to present data that shows that graduate students go onto cancer-associated postdocs and maintain that career path.

- Statement from one NCI representative that the organization has concerns with the funded individual making sure they identify his/herself as a *cancer biologist* and not any other specialty. Therefore it would be wise to emphasize this in future grant applications.
- Question from Dr. Torti:

  What would make a good T32 grant?

  Rep #1: An application that reflects a program that…
  - Have a genuine focus in cancer biology
  - Demonstrate a distinct benefit to trainees who enroll in this program
  - Addresses the postdoctoral program separately and list strengths
  - Has good interaction between M.D.s and the students
  - Has to have investigators with strong funding and publication records
  - Should have some sort of external evaluation on a typical basis
  - Has a program director active in research
  - Have a mix of senior and junior research faculty that are well trained and experienced
  - Have an evaluation process for faculty on the training grant, to ensure "fresh" circulation of faculty and to maintain top-tier cancer research
  - Should have a selective application process for students (result of good recruitment)
  - Has students on training program that stay within the department, not just rotating 1st years
  - Is able to justify the number of training slots the grant is asking for.
  - Has an adequate minority recruitment plan

→ *Additional notes*: Make sure the T32 tables are up-to-date and follow the progression of past graduates and postdocs. Amended applications need to have rectified the comments and actions.

Rep #2:
- T32 applications should include updated biosketches of all faculty, to reflect current research support and awards.
- They like to see trainees be on the support at least a couple of years.
- It is good to see junior faculty be included as co-mentors, if they are unable to support students themselves, because they are not only growing as mentors but they help to keep the research fresh.
- It is very important that there are valuable components for postdocs (like a structured program with requirements for postdoc attendees).

- Discussion moved on to talk about the K99 career development awards.

  Rep #1:
  - These are for very junior scientists and can fund non-residents of the US.
  - These awards are replacing the K01s and will include about 20 grants/year (so about 10% funded).

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- Applicants need to justify independence and have a good publication record to be successful.
- Letters of support need to be very enthusiastic and the person needs to show clear knowledge of the applicant.
- The applicant needs to detail good mentoring opportunities available to him/her and this will also be evident in the design of the grant.
- The applicant needs to have good preliminary data and not be too ambitious. They also need to address the shortcomings and alternative plans for experiments.

Rep #2:

- Wants to see that the applicant has taken grant writing classes and perhaps been involved in Grant Rounds, to give a translational consideration to the application
- Notes that the preliminary data doesn't have to be solely by the candidate, so they can use other sources if cited properly

o Question from Consortium: *Can a new postdoc apply for postdoc funding and then apply for a K99?*
  - Answer: The limit is 5 years of research after a doctoral degree, before they are ineligible to apply for this award. Recommended progression: 1. apply for a regular NRSA, 2. apply for K99. More successful awardees typically have 3-4 years of postdoctoral research and an excellent publication record and initiative.

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