CANCER BIOLOGY RETREAT
SCRIBE NOTES BY SESSION

A NOTE OF THANKS TO ALL OF THE SCRIBES!

Session I
Scribe Notes
By Maxine Linial

Cancer biology as an academic discipline

free standing cancer centers

FHCRC - UW, no program, TG, financial back up
MD Anderson - do-sponsor graduate school,TG + institution $, degree granting, 70 students
Moffatt - Ph.D. program, 25 students

departments of cancer biology

McArdle - 40+ years,Ph.D. in cancer biology, interdepartmental, 45 students
Duke - Ph.D. program in cancer related, TG + Univ for two years 25 students - many students in other programs learn cancer biology, but only one program with focussed discipline in c.b.
Wake Forest - dept. based Dept of CB - 25 - control over curriculum
U. of Penn - CMB program - subdivision cell growth and cancer, dedicated curruculum - 70 students - in five schools, 8 primary faculty+secondary appts, complicated admin structure
U. Mass - 3yrs, just starting training program, med school only
Vanderbilt - 5 yrs, 50 students ca. 80 faculty (8 1^o)
Georgetown - 5 yrs - has cancer center, dept and program, 50 students, MS program with U. of DC (minority inst)- students pay, no thesis, no hard funding, Ph.D. in tumor biology

programs

Arizona - Ph.D. in cancer biology since 1982, 40 students funded for 1^{st} year, dedicated curriculum
Northwestern - 1978 - tumor cell biology interdept program. 1990s - one umbella program CMB, with tracts incl cancer biology, with defined curriculum. strong program identity, 40 students,40 faculty, cancer ctr financial support, students are departmental but supposed to have cohesive journal club etc
Wayne State - TG led to Ph.D. in cancer biology since 1989 interdis accross depts. 35 students admitted to 10 depts - cancer biology gets about 6 students - total about 30 students, 60 faculty. grad school supports all students for 2 years, and half support for 2 yrs.
U. Minn - 1995, combined interdis program in micro,imm and cancer bio. all students supported for first year from 4 places. common core curric. 75 faculty, 75 students (half in cancer center labs). TG broader than program - some faculty not in canc biology
Indiana U Med - no degree granting in cancer biology, students in depts - 27 faculty in CC, minor in cancer biology, new T32
Princeton - no med schl of CC - cancer program since 1984 - in dept of mol bio. umbrella program - degree in mol biol. 120 students in mol bio - 1^{st} yr univ - then TG (small one in CB), there is a curr in cancer biol. clinical studies through NJ cancer center.

Marshall U (WV) - Ph.D. in biomedical sciences, cancer biol is new tract.- evolving - 12 faculty from 3 depts. no curr yet, interdis, cancer ctr under constr
UNC - integrated into T32 - no Ph.D. granting
Oklahoma - building prog - tract within depts.
Baylor - no Ph.D. in CB, T32 in viral oncology (16 faculty), dept. based degrees
UCI - joint recruiting through one program in main campus and med school. Tract in CB 20-30 students, with formal curr. T32 in cancer

Dartmouth - evolving program. 1991 T32 in canc biol, developing tract in CB nowm -depends upon T32
U. of Iowa - Ph.D. in free radical and rad biol (radiation biology) , no suppr from CC
Stanford - interdis program

New Jersey - Rutgers and R.W. Johnson Medical School - virtual program, joint grad school - wind up in depts and get degree in those depts - no support for cancer biology per se

Masters degrees can be revenue generating - pay tuition, no stipends - occur at several institutions (Georgetown, NWestern)

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problems - NCI funding emphasis on postdocs
- CB programs can add addn coursework - hard to get faculty to teach, to have unified curr.
- lack of identity for T32s

many varied paths to cancer biology training

funding issues for training programs

T32
funding for non US citizens
tuition
cancer center training program mandate from NCI
T32 shifting postdoc and predoc training levels
lack of predoc fellowships

Session II
Scribe Notes
Jill Pelling

Question 1: Should there be a core curriculum for cancer biology? Answer - an emphatic yes. It should include the following subject areas, in generally the following ranked order:
Introduction to histopathology of neoplasia
aberrations in signal transduction pathways
oncogenes and tumor suppressor genes
cell proliferation/cell cycle/cell death
invasion/metastasis/angiogenesis
experimental models of carcinogenesis and relation to human cancers
cancer genomics/proteomics
cancer epidemiology
DNA damage and repair
carcinogens - microbial, chemical, radiation
introduction to therapeutics/gene therapy/cancer immunotherapy/targeted therapy
introduction to concepts of human diagnosis/therapy

Question 2 - strategies for getting a core curriculum accepted?
propose smaller course length
tailor your CB course to fit other curricular requirements

Question 3 - Should we establish a national trainee meeting for pre-docs? answer - YES

We should seek AACR support for the trainee meeting
We should consider expanding the Annual Histopathology of Neoplasia course that AACR puts on, to include more pre-docs.
A suggestion was made to include trainees at the next Cancer Biology Program Directors Meeting - there was controversy over whether this was the appropriate forum.

Session III
Scribe Notes
Beverly Delidow

Funding for Cancer Biology Training Programs
Facilitators: Edmund Lattime, Chris Counter
Scribe Notes: Beverly Delidow

Asked: What is one major obstacle for funding of CB training programs?

- Obtaining T32
- Maintaining T32 funding
- Funding non-US citizens
- Funding student tuitions
- Perceived limitation in amount of pre-doctoral funding available
    - The NCI has targeted a 3:1 ratio of post:pre-doctoral training, shifting T32 moneys to the postdoctoral programs.
    - May not reflect actual practice
    - Makes it difficult for graduate programs because of the lack of other sources for graduate student funding.
- Obtaining institutional support
    - Often Cancer Centers do not contribute to supporting training programs
    - Suggestion made to have provision of such support as part of the NCI mandate to Cancer Centers
    - Ask Cancer Centers to consider education as part of fundamental mandate
- Problem of “gap funding” –
    - funding for students whose mentors either lack or have lost grant funding
    - Mechanisms used:
        - Co-mentors
        - Bridge funding from departments, programs and institutions

Summary statement:
These are faced in many disciplines. As a unique component for Cancer Biology programs we suggest that cancer biology research training be considered part of the mission of the cancer center.

Asked: Are combined admissions (admission to an umbrella program rather than directed admission in subject area) an obstacle?

- Consensus was – not really
- Advantages:
    - Competition for/access to better students
    - Perception that quality of applicants increases
    - Allows pooling of resources for recruitment

    - A shared core curriculum in first year also allows some pooling of resources (no duplication of effort)

- Disadvantages
    - Targeted recruitment/admission brings interested students directly to the program
    - Students recruited to umbrella programs may not go into a cancer lab
    - Core curriculum for umbrella program may conflict with specific requirements of Cancer Biology curriculum.
    - It is sometimes more difficult to recruit faculty to teach in Cancer Biology courses because it is not a departmental course or responsibility.

Additional identified conflict: Time/funding constraints

- Funding students while they take additional courses required to specialize in Cancer Biology
- Faculty prefer to use grant funding to support students to spend time in the lab, not to take courses
- Constraints also caused by limits on the number of years a student may get funding or may spend in the program
- Suggestion made that doing laboratory rotations was an unnecessary use of time—not supported by the group in general, who felt this was important
- Very few programs have a requirement that their students TA or teach.
- Many have communications courses of various kinds.

Summary Statement: Recruitment of students into umbrella programs is a benefit for Cancer Biology programs.

Session IV
Scribe Notes
Hung Fan & Ann Roman

Should Cancer Biology Training Programs expose students to clinical issues?

- Consensus: this is important
- Implementation
    - Consensus – disease-driven discussions (e.g. colon cancer)
    - Examples
        - Clinical Cancer for Basic Scientists course (taught by clinicians)
        - Clinicians talking about the molecular basis of disease and treatment as part of or enrichment to cancer biology courses
        - Research papers on clinical aspects of disease; students propose novel therapies
        - Students attending gross pathology labs to see real tumors
        - Course in cancer histopathology
    - Interactions with cancer patients – less consensus on desirability
    - Examples
        - Shadowing clinicians in cancer clinics (ranges from 1-time through 1 month daily shadowing)
        - Doctor/patient coming to class

Should Cancer Biology training programs emphasize translational research?

- Definitions of translational research varied/uncertain
- Predoc's
    - Should be trained in hypothesis-driven/mechanistic research
    - Correlative research less desirable
- Postdoc's – correlative research makes sense, since this is a significant funding source for independent investigators
- Novel programs discussed
    - Fred Hutchinson: dual-mentored MS in epidemiology/PhD in molecular biology. Goal is bridge the gap between epidemiologists and molecular biologists. Adds 1 year to PhD program.

- Northwestern: MPH/PhD program. Students take MPH courses at night, no additional time required.
- UNC: course on translation towards pharmaceutical research/drug development – “Target-based drug discovery”

Teaching of Cancer Biology to med students

- Cancer is typically taught by pathologists & oncologists from a descriptive approach
- Need to teach cancer from a mechanistic point of view
- Need to teach medical oncologists how to do research
- Changing how cancer is taught raises “turf” issues

Session V
Scribe Notes
Marie Hanigan

How involved should we be in student's career choices

- students worry about funding and hours working with regard to academic careers
- campus wide career forums
- bring in speakers – pharmaceutical industry, patent lawyers, etc.,
    - show predoc various pathways
    - postdocs – help them identify their strengths and weaknesses
- teaching – lack of training as teachers in most Ph.D. programs
- training students in grant writing to give them exposure to academic careers
- students need to understand pharmaceutical industry careers –paperwork, lack of job stability, etc
- some institutions have requirements for writing for students
- female and minority students are they disproportionately dropping out of research?

Training Grants: how important is the career choices of the predoc and postdocs

- teachers undergrad, patent lawyers, intellectual property – not viewed favorably on T32
- study section – predocs small amount of attrition OK, postdoc should be continuing in research (academic, industry or government) also publication record while on the grant is important

Postdoc Training

- New Jersey: Cross trains MD (at end of residency) an PhDs (postdocs) together, they have a T32 that supports them for two years, MDs have half a day a week in the clinic to maintain their board certification – MDs design clinical trial to go with their basic research (have to get other funds for fringe benefits for MDs- get from Cancer Center) , pay the MDs as 7^{th} year postdocs.
- Penn: Teaches ethics, presentation (from Wharton), writing, Cancer Center monthly meeting but postdocs complain too many courses
- Expect postdocs at Cancer Center monthly meeting
- UC Irving: annual cancer center retreat postdoc must present, also must take cancer biology grad course
- UNC Chapel Hill: T32 with 24 slots for postdocs - weekly seminar series, postdoc assoc., retreat, career info, strong sense of community among postdocs. (feel recognized and appreciated)

- NIH hears complaints from postdocs about the things they are not getting – mentoring courses (see postdoc association website)
- Iowa: Teaches postdocs how to evaluate manuscripts and grants
- Penn: Gets 10 grants from faculty who have submitted grants in the past two years for the students and post docs to review in mock study section – everyone gets one grant students in groups of six or seven
- postdoc on training grant – on T32 not employees and do not get benefits, MDs do get benefits FASEB tried to intervene with NIH regarding benefits for postdocs
- NIH does not say that an institution can not call postdocs employees, NIH does say that postdocs can be classified as students