1. Survey of medical and osteopathy schools curricula – integrated, partially integrated, fully integrated – Identify the right person from CABTRAC Schools; Currmit

2. Create Article for Academic Medicine, JCO, Medical School Objectives Project [AAMC] based on PhD Training in Cancer Biology; 1st draft in am at breakfast

3. Get inside the Tests; National Board of Medical Examiners; Testing of oncology knowledge

4. Tracking students – backtracking proposal comparing oncology fellows with cardiology fellows

5. Engage high school, college students taught by our medical and graduate students [summer program]
2010 Report

• CABTRAC commits to the top four missions

• Promote a ‘fully integrated’ cancer curriculum within our schools of Medicine and Osteopathy to complement the organ-based teaching

• Consider how to promote ‘scholarly concentrations’ in Oncology for those interested- Oncology Interest Groups, High School Programs

• Define a ‘no medical student left behind’ basis for fundamental knowledge in cancer biology, diagnosis, and treatment
Fundamental Knowledge In Cancer Biology, Diagnosis, And Treatment

• Hallmarks of cancer, tumor microenvironment
• Cell growth [cell cycle] and cell death [apoptosis/autophagy, necrosis]
• Screening tests for cancer
• Cancer incidence and types [carcinoma, sarcoma, hematologic]
• Cancer emergencies
• Basis for targeted therapeutics and immunotherapy
# Oncology Interest Groups at Top Research Schools: 15/23 Total

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<th>U.S. News Rank</th>
<th>Institution</th>
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</table>

Tiffany Chen University of Pittsburgh School of Medicine
Oncology Interest Group
Quarterly Lunches with Faculty Presentation
Summer Research Fair; Shadowing Experiences

October 18, 2010 Speed Dating Goals

• Provide faculty and students with quickly evaluate if there are opportunities to collaborate on a summer project
• A process designed to efficiently manage introductions:
  – Limited meeting time (i.e. 10-15 mins)
  – Swap contact information
  – Introduce themselves and discuss their goals and interests
  – Decide whether there is enough interest for follow up
    • Phone call, e-mail
• A large number of meetings can be arranged in a short amount of time
  – Increases chance of stimulating faculty/student relationships

Tiffany Chen, Brittany Gary
UPCI Summer Academy – 2010; P30 Cure Supplement NCI

Megan Seippel
William Buchser
Jack Kent Cooke Foundation

Medical Student
Weinberg – Cancer Laboratory Project Presentation
**Upsom Cancer Curriculum**

**First Year:**
- **Introduction to Being a Physician (8/20 – 8/24)**
  - Introductory overview of Breast Cancer as a Public Health Problem
  - Breast Cancer Patient Interview
  - Small group Breast Cancer Patient Interview
  - Small group Breast Cancer debriefing
- **Human Genetics (11/17 - 12/15)**
  - Introduction to Cancer Genetics
  - Cancer Genetics 1
  - Cancer Genetics 2
  - Inherited, Familial and Sporadic Cancers
  - Chemical Genetics
  - Gene Therapy
  - Patient Conference: Cancer
  - Cancer Genetics and Counseling
  - Pharmacogenetics
- **Immunology in Health and Disease (1/15 – 2/8)**
  - Immune Response against Tumors
  - Immunological Approaches for Cancer Therapy
- **Medical Microbiology (2/11 – 3/6)**
  - Introduction to Viruses: Viral Growth and Replication
  - (Table with cancers caused by some viruses)
- **Neuroscience (3/17 – 5/9)**

**Second Year:**
- **Pathobiology (8/18 – 8/22)**
  - Neoplasia 1 Workshop
  - Neoplasia 1 Lecture – Definitions
  - Neoplasia 2 Workshop
  - Neoplasia 2 Lecture – invasion by cancer, mediators of metastatic disease, gatekeeper genes and caretaker genes, initiator and promoters, chemical carcinogens, grading and staging
- **Cardiology (8/25 – 9/29)**
  - Miscellaneous Myocardial Disease (Cardiac Myxomas)
  - Pulmonary Section (10/20 – 11/7)
  - Introduction to Chest Radiology 2
  - Lung Cancer
  - Pathology: Bronchogenic Carcinoma and Mesothelioma
- **Digestion and Nutrition (11/10 – 12/19)**
  - Esophageal Diseases: Evaluation of Dysphagia, Heartburn and Non-Cardiac Chest Pain
  - Introduction of GI Pathology
  - Pathology of the Esophagus
  - Physiology and Diseases of the Stomach I and II (Zollinger Ellison Syndrome and carcinoma)
  - Pathology of the Stomach (Benign tumors, gastric carcinoma, gastric lymphoma, Gastrointestinal Stromal Tumors, Neuroendocrine tumors, metastatic tumors)
  - Case Workshop #1 – Esophageal Case Studies
  - Pathology of the Small Bowel (adenoma, carcinoma, carcinoid, lymphoma)
  - Colon Cancer Genetics and Screening
  - Pathology of the Colon
  - Treatment and Prevention of G.I. Maliganacies
  - Overview of Liver Pathology
  - Pathology – Liver, Part II: Tumors and Tumor-Like Lesions of the Liver, Gallbladder, &Biliary Tree
  - Chronic Pancreatitis & Pancreatic Cancer
  - Pathology of the Pancreas
**74 Hours+16 [0] Cancer Curriculum**

**Hematology (1/5 – 1/20)**
- Overview and genetics of Hematologic Malignancies
- Pathologic evaluation of Hematologic Malignancies
- Chemotherapy – Part 1
- Chemotherapy – Part 2
- Plasma Cell Disorders
- Chronic Leukemias
- Acute Leukemias
- Myeloproliferative disorders/neoplasms & Myelodysplastic syndromes
- Pathology of Lymphoproliferative Disorders
- Hematopathology Workshop – Leukemias
- Pediatric Hematologic Malignancies Part 1
- Pediatric Hematologic Malignancies Part 2
- Hematopathology Workshop III – lymphoma
- Case conference III – Hematologic Malignancies

**Endocrinology (1/21 – 2/6)**
- Physiology of the Posterior Lobe of the Pituitary Gland and Diabetes Insipidus
- Pituitary Hypersecretion and Pituitary Tumors
- Cushing’s Syndrome – Overproduction of Cortisol
- Adrenal Medulla/ Pheochromocytoma
- Endocrine Regulation of Calcium
- Homeostasis Hyper and Hypocalcemia
- Metabolic Bone Disease
- Hypothyroidism
- Thyrotoxicosis
- Thyroid Pathology
- Thyroid Nodules and Thyroid Neoplasia

**Reproductive and Developmental Biology (2/9 – 2/27)**
- Pathology Lecture – Prostate and Testes
- Clinical Pathologic Correlation – Diseases of the Prostate and Testes
- Clinical Pathologic Correlation – Diseases of the Cervix and Uterus
- Pathology of the Cervix
- Pathology of the Uterine Corpus
- Pathology of the Breast
- Pathology of the Ovary
- Clinical Pathologic Correlation – Diseases of the Breast

Michael T. Lotze and Lorissa Geskin

**Monday, October 26, 2009 – Day 1**
- 8:00 – 8:30 Interim Quiz – Screening for Cancer
  
- 8:30 – 9:00 Lecture: Palliative Care
- 9:00 – 9:30 Lecture: Translational Research
- 9:30 – 10:00 Lecture: How Geriatric Issues Influence Cancer Screening and Treatment Decisions
- 10:00 – 12:00 Practice of Oncology II
- 12:00 – 1:00 UPCI Seminar Series-extra credit

**Tuesday, October 27, 2009 - Day 2.**
- 8:00 – 8:30 Interim Quiz – Screening for Cancer
  
- 8:30 – 9:00 Lecture: Palliative Care
- 9:00 – 9:30 Lecture: Translational Research
- 9:30 – 10:00 Lecture: How Geriatric Issues Influence Cancer Screening and Treatment Decisions
- 10:00 – 12:00 Practice of Oncology II
- 12:00 – 1:00 UPCI Seminar Series-extra credit

**Friday, October 30, 2008 - Day 5**
- 8:00 – 8:30 Interim Quiz – Screening for Cancer
  
- 8:30 – 9:00 Lecture: Palliative Care
- 9:00 – 9:30 Lecture: Translational Research
- 9:30 – 10:00 Lecture: How Geriatric Issues Influence Cancer Screening and Treatment Decisions
- 10:00 – 12:00 Practice of Oncology II
- 12:00 – 1:00 UPCI Seminar Series-extra credit

**3rd Year**

**Monday, October 26, 2009 – Day 1**
- 8:00 – 8:30 Interim Quiz – Screening for Cancer
  
- 8:30 – 9:00 Lecture: Palliative Care
- 9:00 – 9:30 Lecture: Translational Research
- 9:30 – 10:00 Lecture: How Geriatric Issues Influence Cancer Screening and Treatment Decisions
- 10:00 – 12:00 Practice of Oncology II
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- 8:00 – 8:30 Interim Quiz – Screening for Cancer
  
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- 9:30 – 10:00 Lecture: How Geriatric Issues Influence Cancer Screening and Treatment Decisions
- 10:00 – 12:00 Practice of Oncology II
- 12:00 – 1:00 UPCI Seminar Series-extra credit
The Cancer Biology Training Consortium (CABTRAC) was established in 2005 to facilitate the exchange of ideas between individuals and institutions dedicated to the mission of training the next generation of cancer researchers and clinicians. The consortium works closely with over 50 institutions within the US as well as the National Cancer Institute's Cancer Training Branch. The Cancer Biology Chair & Program Directors Retreat and CABTRAC Annual Meeting will be held in Tucson, Arizona November 5-7. Thus we are on a short deadline to report a rather simple list of questions. You may choose to answer these yourselves or refer on to the Curriculum Dean, the Dean for Medical Education, or a suitable individual at your institution.

1] Do you have a dedicated cancer curriculum course in any year? Y N Details: ____________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

2] Do you have a means to assess current cancer knowledge other than through the USMLE’s Y N Details: ____________________________________________________________
____________________________________________________________________________________

3] Do you have records of your students’ ultimate career paths and in particular if they went into Oncology subspecialties? Y N Details: ____________________________________________________________
____________________________________________________________________________________

4] Would you be willing to be contacted for a more detailed set of questions? Y N Who would be the person, email, and phone number to contact? __________________________________________
____________________________________________________________________________________

Thank you very much for considering this request. Megan Seippel
Do you have a dedicated cancer curriculum course in any year?

Samples of Detailed Responses

“Cancer is not covered in one particular course but spread longitudinally over most courses.”

“No, students receive education in cancer as part of pathology and other courses.”

“Genetics and Neoplasia is a first year module/course. It is 4 weeks in length.”

Brittany Gary, University of Pittsburgh Cancer Institute
Do you have a means to assess current cancer knowledge other than through the USMLE’s

Samples of Detailed Responses

“Assessment of knowledge, other than block exam questions, would be mostly via USMLE.”

“Comprehensive final exams in each block (customized NBME exams). I cannot say that this has been actively done but it could be.”

“We assess cancer knowledge through questions on our module examinations.”
Do you have records of your students’ ultimate career paths and in particular if they went into Oncology subspecialties?

Samples of Detailed Responses

“Our detailed data are limited to the initial residency placement.”

“As these specialty decisions are made after they graduate from medical school, we do not have such records.”

“We do not track our students long term. However, in reviewing the last three graduating classes, we did have four students who matched into PGY2 Radiation Oncology positions.”
Backtracking: Correlating Oncology Education with Entrance into the Field by Examination of Current Fellows

Tiffany Chen, University of Pittsburgh School of Medicine
Initial Plan

TEST GROUP:
Survey *Pitt Oncology* Fellows in:

CONTROL GROUP:
Survey other *Pitt Cardiology* Fellows in:

Surgical

Medical

Pediatric
Survey Questions

1. Fellow’s Name:
2. Medical School:
3. Date of Med School Graduation:
4. Internship and Residency Program:

5. In regard to oncology education in your **PRE-CLINICAL** years, was your school’s curriculum:
   (FULLY integrated, SEMI integrated, or NON integrated)?

6. In regard to oncology education in your **CLINICAL** years, was your school’s curriculum:
   (FULLY integrated, SEMI integrated, or NON integrated)?

7. How well do you feel your **PRE-CLINICAL** years of medical school prepared you for a career in oncology?
   (1 – not at all, 2 – a little, 3 – somewhat, 4 – well, 5 – very well)

8. How well do you feel your **CLINICAL** years of medical school prepared you for a career in oncology?
   (1 – not at all, 2 – a little, 3 – somewhat, 4 – well, 5 – very well)

9. How did you decide on a career in oncology? (choose the best answer)
   (medical school didactic experiences, medical school patient experiences, residency experiences, personal experiences)
   Details: __________________________________________

10. May we inquire at your medical school about their oncology curriculum in the years you attended with your name?

**INTEGRATION KEY**

**FULLY**: Oncology had its own unit in all years of pre-clinical/clinical curriculum

**SEMI**: Oncology had its own unit in one year of the curriculum, and other educational units were interspersed throughout the other year

**NON**: Oncology had no unit of its own, and was only taught interspersed amid other units
Survey Questions for Control Group
(Cardiology)

(Cardiology chosen because fellows also go through a general residency in IM/General Surgery/Pediatrics, before choosing a Cardio fellowship.)

Previous survey questions with the following alterations:

7. How well do you feel your PRE-CLINICAL years of medical school would have prepared you for a career in oncology?  
   (1 – not at all, 2 – a little, 3 – somewhat, 4 – well, 5 – very well)
8. How well do you feel your CLINICAL years of medical school would have prepared you for a career in oncology?  
   (1 – not at all, 2 – a little, 3 – somewhat, 4 – well, 5 – very well)
9. How did you decide on a career in cardiology (choose the best answer)?  
   (medical school didactic experiences, medical school patient experiences, residency experiences, personal experiences)
Expanded Plan

TEST GROUP:
Survey other CABTRAC Oncology Fellows in:

Surgical

Medical

Pediatric

CONTROL GROUP:
Survey other CABTRAC Cardiology Fellows in:
Secondary Plan: Search-based

Choose N fellowship programs from list of total in country (ASCO list and analogous groups)

Search online for list of current fellows in a program

Search online for medical schools and graduation dates of fellows (if available, on the list webpage; if not, name + hospital name)

Search CURRMIT for oncology curricula of those medical schools at the time of fellows’ attendance
Primary issue discussed:
• As cancer is the second most frequent illness diagnosed in the US, and remains a leading cause of death, it is likely that essentially all of today’s medical students will treat cancer patients during their careers.
• To do this effectively, MDs need to have some working knowledge of the cellular basis of cancer, and how the ever-increasing panoply of standard and targeted cancer therapies can be used effectively.
• Unfortunately, the cancer curriculum at many medical schools has been taught primarily as part of Pathology or on an organ-by-organ basis, without the benefit of a more conceptual and theoretical framework.
• Cancer education is often fragmented and outmoded in its delivery and integration.
Goals:

(1) Identify mechanisms whereby cancer biology faculty can provide guidance and expertise in teaching basic cancer biology concepts to MD students at multiple stages in their training;

(2) Develop new programs to increase MD students’ interest in cancer biology and oncology; and

(3) Develop a working relationship between CABTRAC and LCME, GME and RRC committees to coordinate curriculum and relevant examination topics.
Recommendations:

1. As suggested in the 2008 CABTRAC report, we recommend developing a survey to determine the range of pedagogical approaches used to teach cancer biology at representative medical schools. It is probably most feasible to start with medical schools already involved in CABTRAC, and expand to include other CCCs and medical schools as needed. As noted previously, the development of such a survey will require input from many CABTRAC members to make it inclusive and effective. The data from this survey will be useful for working with educational administrators, the National Board of Medical Examiners, GME, committees, etc. to ensure a “consistent outcome product as evidenced by knowledge and testing” (CABTRAC report 2008).

2. Consider and make recommendations concerning the proper role(s) for Departments of Cancer Biology and existing Cancer Biology Graduate and Postdoctoral Training programs in teaching medical students.

3. Faculty in Cancer Biology departments, or those involved in cancer-related training programs, are encouraged to work with course directors of existing medical school curricula to determine the best formula for integrating formal cancer biology training. It was suggested that these efforts will be most successful if presented as “value added” to the existing curriculum, and could include opportunities in each year of medical training. Although the utility of specific programs will depend on the medical school in question, suggestions include the following:
First year: Periodic, informal case-based discussions of the basic science underlying a particular cancer diagnosis and treatment, and how this understanding has led to the development of novel therapies. These sessions could be incorporated into existing basic science curricula to provide a disease context for genetics, cell biology, metabolism, etc. and would be run by teams of basic and clinical faculty working together.

Second year: A block of lectures, or formal course focused on basic concepts in cancer biology and physiology, with a view toward understanding how translational research and emerging targeted therapies are being used to augment traditional surgical, chemo- and radiation therapies.

Third year: An intensive 2-3 day course on clinical aspects of cancer including cancer screening, treating cancer emergencies, pain management, hospice, etc.

Fourth year: More in-depth elective courses on the basic and clinical biology of specific cancers, and the use of novel therapies.

4. Explore the possibility of sharing videotaped medical school cancer biology classes and other teaching materials through the CABTRAC website. It was agreed that several issues regarding copyright laws and oversight would need to be carefully examined before this idea could be implemented.
5. Encourage interested medical students to form “Cancer Interest Groups”, which could include regular, formal and informal discussions with faculty, fellows, and trainees including use of journal clubs and other didactic/Socratic interactions regarding topics in cancer biology and treatment. Faculty could be from home institutions or seminar speakers visiting from outside (as always, providing food to attendees is a key to success...).

6. Develop means to identify outcome measures from more effective application of these principles noted above including choice of careers in oncology, performance on standardized exams, etc.