FIGHTING CANCER: A UNI GRADUATE’S PERSPECTIVE ON EDUCATION, RESEARCH AND CAREERS

Emily Van Laar, BA, MS
LEARNING OBJECTIVES

• Outline current position roles and responsibilities
• Provide insights into successful outcomes in undergraduate and graduate school
• Summarize career path and key influencers
• Highlight careers in health field
• Inspire and excite!
Show of Hands:
• 1st Years, 2nd Years, 3rd Years, 4th Years, Graduate Students
• Majors: Biology, Chemistry, Health, Education, Environmental, Basic Sciences, Others?
• My Topics – Chose your own adventure…
  1. Current Role – Director Medical Education, Medscape/WebMD, President’s Cancer Panel Workshop
  2. Undergraduate at UNI – Biology Major, Chemistry Minor
  3. Graduate School – University of Texas GSBS – Masters in Cancer Biology
  4. Career Path – Research Scientist, Medical Education, Medical Liaison, Strategist
  5. Jobs in Research, Pharmaceuticals, Health, Education
ABOUT MY EMPLOYER

• WebMD in 2016
  • 201 million unique users per month
  • Up to $705 million revenue in 2016
  • Provides health information, symptom checkers, and services to patients

• Medscape
  • Provides specialists, primary care physicians, and other health professionals the Web's most robust and integrated medical information and educational tools
    • News and Updates
    • Resources – Drugs and Diseases
    • Continuing Medical Education
    • Consult
MY JOB

• Director of Medical Education - Medscape
  • Identify education needs and methods to address education gaps
  • Interact with cancer thought leaders
  • Survey current cancer landscape
  • Develop continuing medical education (CME) courses for Hematologists and Oncologists
  • Present outcomes at major medical meetings
• Work from home office
• Survey literature and news
• Provide updates and reviews to supporters
• Attend conferences
• Review grants and outcome reports
• Develop publications
Connected Health: Improving Patients' Engagement and Activation for Cancer-Related Outcomes

• Panel of experts from academics, industry, and patients

• Examine how personal health data drives change in health management and institutional research

• Key to future is engaged patients, accessibility of data, and ability to interpret “big data”
PROS AND CONS

• Pro:
  • Help patients with cancer
  • Travel – experience new places
  • Interact with the greatest minds in cancer

• Cons:
  • Travel – exhausting and miss family
  • Always changing priorities
TEMPERATURE CHECK

Questions?
WHAT INFLUENCES PASSION?

Marvel Ballou

Benevolent: Definition

- Having a disposition to do good.
- Possessing or manifesting love for mankind.
- Altruistic or charitable.
THE UNIVERSITY OF NORTHERN IOWA

• Great mentorship
• Smaller class size
• Employment opportunities
• Quality education
• Volunteer opportunities
UT SUMMER RESEARCH PROGRAM

• 9 week program
• 40 hours per week in a research lab
• Weekly, one-hour seminars on cutting-edge biomedical research topics
• Stayed in dorms, funding assistance provided
• Primary investigator oversaw project
• Presented study and results as seminar
• Eligible for college credit
• Bridge to graduate school

http://med.uth.tmc.edu/administration/edu_programs/ep/summer_research_program/summer_research_undergraduate.htm
UNIVERSITY OF TEXAS: GRADUATE SCHOOL OF BIOMEDICAL SCIENCE

• #1 Cancer Treatment Center in US
• Outstanding faculty
• Cutting edge technology
• Collaborative spirit
• Daily seminars
GRADUATE SCHOOL HIGHLIGHTS

Lab rotations:

• Dr. Sirbasku – Cellular biology
• Dr. Price – Cancer/animal biology
• Dr. Bar-Eli – Molecular biology
What is Cancer?

Normal Cell Growth

Cancer Proliferation

Tumor Suppressor Gene
Proto-Oncogene

Oncogene

STOP
GO

GRADUATE SCHOOL HIGHLIGHTS
• Standard Techniques:

In vitro:

- Cell Culture - Cell passage, Transfections, Anchorage dependence
- Protein - Western, Immunohistochemistry, EMSA
- mRNA - RT-PCR, Northern
Standard Techniques:

In vivo:

Mouse models -  Orthotopic
Subcutaneous
Tail vein
Intra-tibia
Intra-carotid artery
THESIS HIGHLIGHTS

AP-2

MDA-MB-231

In vitro

Molecular Effects

Changes in gene expression

Cellular Effects

Changes in Proliferation

Systemic Effects

Metastasis Formation

In vivo
• Decreased cell proliferation
• Decreased metastasis formation
• Increase expression of target genes

AP-2 Acts as Tumor Suppressor Gene
SCIENTIFIC PAPERS – A KEY TO YOUR SUCCESS

- Reading, Writing, and Interpretation
  - Primary means of communication
  - Understanding format and content allows application to research
  - Opportunity for journal clubs
GRADUATE SCHOOL SUMMARY

• MD Anderson – leader in cancer field

• Courses complimented my thesis work

• Rotations gave broad understanding of experimental techniques

• Thesis work contributed to the field of cancer

• Learned techniques that are essential to career
TEMPERATURE CHECK

Questions?
I’VE GOT BILLS – I’VE GOTTA PAY...SO I’M GONNA WORK, WORK, WORK EVERYDAY!

- Research Scientist
- Translational Research
- Medical Education
- Medical Science Liaison
- Clinical Strategy
Average drug development cost is $802 million
MGI PHARMA, INC. is an oncology and acute care focused biopharmaceutical company that acquires, researches, develops and commercializes proprietary products that address the unmet needs of patients.
RESEARCH SCIENTIST/TRANSLATIONAL RESEARCH

Research Scientist

• Designed, oversaw, interpret, present pharmacology studies
• In vitro and in vivo studies to assess anticancer compounds
• Goal: Maximize therapeutic index

• Translational Research
  • How to better use the drug in humans
  • Predicting who is more likely to respond to a drug or who may have side effects
  • Design clinical trial protocols
MANAGER MEDICAL EDUCATION

• Job Focus:
  • Publications
  • Advisory meetings
  • Funding of continuing medical education
  • Review medical information for promotional material
  • Review investigator-initiated clinical trial protocol review
Figure 1. The Global Activities of MSLs

Which of the following activities do you participate in? (Check all that apply)

- Delivering scientific presentations
- KOL relationship management
- Identifying and Training Speakers
- Educating KOLs and other Healthcare
- Supporting advisory boards
- Investigator led research (ITIs, ISTs, etc.)
- Coordinating company sponsored research/trials
- Attending medical conferences
- Competitive intelligence gathering
- Medical publications
- HEOR presentations or research
- Managed care activities
- Continuing Medical Education (CME) activities
- Training or supporting sales force
- Mentoring/Training new MSLs
CAREERS IN CANCER

- Nursing
- Medicine
- Pharmacy
- Social Work
- Public Health
- Research
- Cancer Registration
- Education
- Writing
- Marketing
- Law
PHARMACEUTICAL JOBS
FUTURE OF CANCER

PREVENTABLE CAUSES OF CANCER

Among the factors with the biggest impact on cancer incidence in the United States are the following:

- ~33% of cancer diagnoses are caused by tobacco use.
- ~20% of cancer diagnoses are related to individuals being obese or overweight.
- ~16% of cancer diagnoses are related to infection with one of several cancer-causing pathogens.
- ~5% of cancer diagnoses are related to individuals getting insufficient physical activity.
- ~5% of cancer diagnoses are related to individuals having poor dietary habits.
- ~2% of cancer diagnoses are a result of exposure to ultraviolet light from the sun or tanning devices.

Personalized Cancer Therapy

Prescription decisions are made before treatment begins.

Cancer MoonShot 2020

Science

Breakthrough of the Year
Cancer Immunotherapy
T cells on the attack
Questions?