21/02/2018

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Fun of the Week
Hilda Pedraza
Microbiology Student


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Co-produced with the ACS Division of Chemical Health and Safety and the ACS Committee of Chemical Safety

Experts
Ralph Sixtart
Keene State College

Samuelia Signnann
Appalachian State University

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Experts
Michael Pollard
Northern University

Felicia Caldeper
GloosSmittenk

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Annette Bak
Senior Director, Head of Advanced Drug Delivery, Innovative Medicines and Early Development, Astra Zeneca
Annette Bak
Career Mission Statement

To serve in a pharmaceutical industry leadership position where my entrepreneurial spirit and proven “make it happen” abilities, combined with my scientific leadership, experience, and commitment to creating value for others, can make a distinct difference for the organization and patients.

“Your life is your message to the world. Make sure it’s inspiring!”
Youth Peace Council, 2012

The World as a Playing Field

1999-2004: Pharmaceuticals, Amgen Inc., CA
2003-2005: MBA, Pepperdine University, CA
1998-1999: Postdoc, University of Kansas, KS
2004-2008: Pharmaceuticals, Amgen Inc., MA
2016-Current: Board member, AAPS, VA
2016-Current: Sr Director, Astra Zeneca, Sweden
1995-1998: PhD, University of Copenhagen, Denmark
2011-2013: China Outsourcing Lead, Merck & Co., Inc.
How much time do you spend working on development areas vs. using your strengths in your current role?

- All my time is working on my strengths
- About a quarter on development areas and three quarters on strengths
- About half on development areas and half on strengths
- About all my time is working on development areas

Use Your Talent Fully…

And you will be great irrespective of gender

Annette Bak
Be Bold and Deliberate…

Control what is important to you

“Be bold, be brave enough to be your true self.”
Queen Latifah

Follow Your Passion…

Select a meaningful, enjoyable pursuit
Pay Back to the Scientific Community…
Science accelerates when shared

Annette Bak

Play the Global Game…
It will challenge, stretch and amaze you

Annette Bak
To All the Great People that Have Shaped My Career…

Your insights, curiosity, and ambitions have been an invaluable learning opportunity for me

Biography and Contact Information

- **20 years experience in global pharma – Amgen Inc, Merck & co, and now AstraZeneca**
  - Leading a department of drug delivery scientists and analytical chemists across Sweden, UK, US responsible for advanced drug delivery of new modalities
  - Chief Chemist on AZ’s R&D leadership team

- **Enjoys the opportunity to impact global and public health through innovative medicines**
  - Publishes on a regular basis, pharmaceutical and behavioral sciences

- **Passionate volunteer in AAPS, ACS, GRC and others**
  - Serves on the AAPS Executive Council as a board member
  - Contributing to the scientific and professional development of the wider community

- **Contact:** [annette.bak@astrazeneca.com](mailto:annette.bak@astrazeneca.com), LinkedIn, Facebook, Twitter
Audience Challenge Question
ANSWER THE QUESTION ON BLUE SCREEN IN ONE MOMENT

How many women chemists in drug discovery or development do you know of?

- I only know four (Annette, Erika, Donna, and Nurulain)
- I know around ten or less
- I know more than ten but less than twenty-five
- I know between twenty-five and fifty
- I know more than fifty

Erika Vieira Araujo
Senior Research Investigator
Oncology Drug Discovery, Bristol-Myers Squibb
Drug Discovery and Lead Optimization Overview

Goal: deliver preclinical candidates from "hit" compounds

Bristol-Myers Squibb

Skills that make a good medicinal chemist

Highly Analytical & Data-Driven Problem Solver
Creative

Good communication
Team player

Learn about what interests you
Be confident!!

Build a network of connections
Good support system

Lessons learned...so far

Find your passion, become an “expert” in an area of interest and never stop learning

Do not be humble to a fault—know when to speak up and how to highlight your accomplishments

How Stereotypes Can Drive Women to Leave Science
Have you participated in these activities that focus on gender differences in science?

- I have read a book that focuses on gender differences in science
- I have attended a lecture that focuses on gender differences in science
- I have both read a book and attended a lecture that focuses on gender
- I have neither read a book nor attended a lecture that focuses on gender differences in science

Donna M. Huryn

Research Professor, Department of Pharmaceutical Sciences and Principal Investigator, Chemical Diversity Center, University of Pittsburgh and Associate Editor, ACS Medicinal Chemistry Letters
Nearly 30 years of Adventures, Across 3 States!

• Education
  – B.A. Chemistry – Cornell University
  – Ph.D. Organic Chemistry – University of Pennsylvania

• Pharma Career
  – Hoffmann-La Roche – Medicinal Chemistry Group/Project Leader
    • Drugs for HIV, Cancer, Inflammation
  – Wyeth Research – Medicinal Chemistry & Chemical Sciences / Director
    • Drugs for Alzheimer’s Disease, depression, schizophrenia
    • Transition between discovery & development

• Academic Career
  – University of Pittsburgh – School of Pharmacy
    • Research Professor
  – University of Pennsylvania - Department of Chemistry
    • Adjunct Faculty

Currently...

Faculty at University of Pittsburgh School of Pharmacy
  – Teaching responsibilities
  – Research activities:
    • Medicinal chemistry directed towards finding innovative treatment for Cancer & Kidney Disease

University of Pennsylvania Department of Chemistry
  • Teaching responsibilities
  • Collaborative research projects: Neurodegenerative Disease
  • Tools for medicinal chemists
Other…

- **ACS Med Chem Letters**
  - Associate Editor
- **Organic Letters**
  - Editorial Advisory Board
- **ACS Division of Organic Chemistry**
  - Councilor
  - Chair
- **NIH Panels**
- **Community Volunteer**

**Medicinal Chemistry Baseline: Technical Skills**

**Baseline: Technical Skills**

- Strong organic chemistry background
  - Synthesis
  - Analytical chemistry
  - Purification chemistry
- Some familiarity with biochemistry

**To Excel: Soft Skills**

- Strong verbal and written communication
- Ability to work with diverse people, within diverse cultures, among various disciplines
- Flexibility
- Adventurousness
What’s it like to be a women in Med Chem?

Medicinal Chemistry: Where Are All the Women?
Donna M. Huryn,* Maria Laura Bolognesi,* and Wendy B. Young* 1
1Department of Pharmaceutical Sciences, University of Pittsburgh, Pittsburgh, Pennsylvania 15260 United States
2Department of Pharmacy and Biotechnology University of Bologna, Bologna, Italy
3Discovery Chemistry, Genentech, Inc., South San Francisco, California 94080, United States

ABSTRACT: A review of multiple parameters including membership in professional organizations, corresponding authorship of medicinal chemistry journal articles, and representation in professional and leadership positions reveals that the percentage of women who participate in professional medicinal chemistry activities is less than 20%. These surrogate demographics are consistent across organizations, regions in the world and the various parameters evaluated, and parallel statistics compiled on the broader participation of women in all STEM fields. As in other STEM fields, a leaky pipeline is also evident. Suggestions for how to encourage and support women in medicinal chemistry in order to provide a more balanced representation are provided.

KEYWORDS: Medicinal chemistry, careers, women in science, women in STEM, leaky pipeline

ACS Med. Chem. Lett. 8, 9, 900-902

How to Succeed

• Find / surround yourself with good mentors, supportive people
• Ask for what you need to succeed
• Read up on gender differences – know yourself
  – Pat Heim: Hardball for Women
  – Sheryl Sandberg: Lean In
Take Home Message

- **Great profession** - Many important problems to solve

- **Some positions / opportunities outside of your “job” are as important as those in it**

- **Balancing professional and personal life takes work** - don’t be afraid to make tough choices / don’t regret

---

**Audience Challenge Question**

**ANSWER THE QUESTION ON BLUE SCREEN IN ONE MOMENT**

If you have the technical skills necessary for a job in drug discovery and development what is next most valued?

- Soft skills
- Networking and connections
- Serendipity
- Other (and if so what, type it in the chat!)
Nurulain Zaveri

Founder, President, Chief Scientific Officer, and Principal Investigator, Astraea Therapeutics

**Education and Career**

- **Bachelor of Pharmacy**
  Bombay Univ. Dept of Chemical Technology (UDCT), India

- **Ph.D. Medicinal Chemistry**
  Duquesne University, Pittsburgh, PA

- **Pfizer India**
  Quality Control and Assurance Trainee (1-year)

- **Postdoctoral Research**
  Stanford Research Institute (SRI Intl)
  (non-profit, non-academic)

- **SRI International**
  Principal Investigator, Project Leader
  Director of Drug Discovery Program

- **Astraea Therapeutics**
  (2009-Current)
  Founder, President, Chief Scientific Officer, Principal Investigator
Also Important to My Career

- Member—Professional organizations such as the American Chemical Society and the American Association of Pharmaceutical Sciences (AAPS)
  - 30-year member of ACS (since second year grad school)(1987-present)
  - Active volunteer at AAPS (1988-present), Chair of Drug Discovery and Development section
- AAPS Fellow
- Active Grant reviewer for NIH, American Foundation for Pharmaceutical Education
- More important— is to contribute/give your time and expertise to the scientific community of which you are a part.

Currently…

As President of Astraea, my responsibilities are:

- To advance the development of our drug candidate pipeline
- To bring in and sustain my company’s funding
- To provide a motivating, stimulating environment at Astraea
- Deliver on our mission of ‘Discoveries for Better Health’.

As Chief Scientific Officer, my responsibilities are:

- Principal Investigator
- Direct, guide, brainstorm
- Drug design, medicinal chemistry, synthetic chemistry, in vitro pharmacology, collaborations, CRO liaison for preclinical development (the fun stuff)
My day...

- Never same day to day
- I could be
  - working on writing a grant
  - thinking of structure-activity relationships or druggability profiles
  - contemplating in vivo data from a collaborator or CRO
  - discussing chemistry or pharmacology results in the lab
  - working on a manuscript
  - business development

Technical and Soft Skills

- Strong background and foundation in pharmaceutical and medicinal chemistry from both my pharmacy background and medicinal chemistry PhD
- This included drug pharmacology, biochemistry, and pharmaceutical chemistry
- Familiarize yourself with aspects of Pharmaceutical Development outside of your specific training

Be curious, never complacent, because as pharmaceutical scientists, we still have many important unmet health questions to solve
Take Home Message

• Work for someone whom YOU can respect and who respects you

• Professional and mutual respect is the ‘fertilizer’ for career growth

• Be open about sharing career experiences, it is a form of passive mentoring

• Be that mentor that the younger generation is looking for

Nurulain Zaveri
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2015

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- Drug Design: From Skeletal Chemistry to Virtual Screening
- Imaging Biomarkers in Drug Development
- Addressing the Development Challenges

2016

Drug Discovery Webinars:
- Drug Discovery: The Value of Structure
- Drug Discovery: The Search for the Next Big Thing
- Drug Discovery: The Future of Drug Discovery
- Drug Discovery: The Power of Frukostine

2017

Drug Discovery Webinars:
- Drug Discovery: The Role of AI in Drug Discovery
- Drug Discovery: The Impact of Big Data
- Drug Discovery: The Future of Drug Discovery
- Drug Discovery: The Power of Frukostine

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Ralph Shorte, Keene State College
Samuel Sigman, Appalachee State University

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Experts

Michael Pollastr, Northeastern University
Felix Caldeir, GavosMIRNA

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