

Post-PhD Career Paths of some UIC Chemistry Graduates

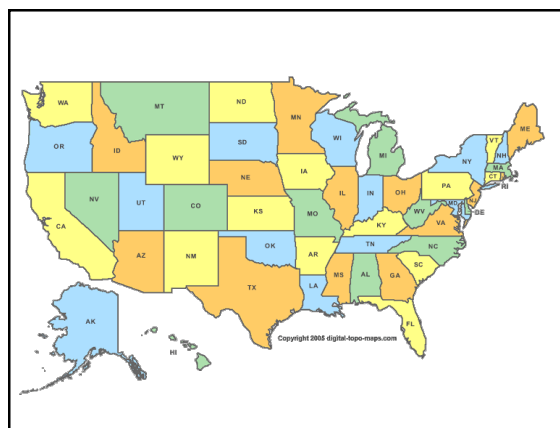
An incomplete survey of 106 UIC Chemistry Ph.D.s whom I have known (1971-...)

by Cynthia J. Jameson, Professor Emeritus Sept 2013

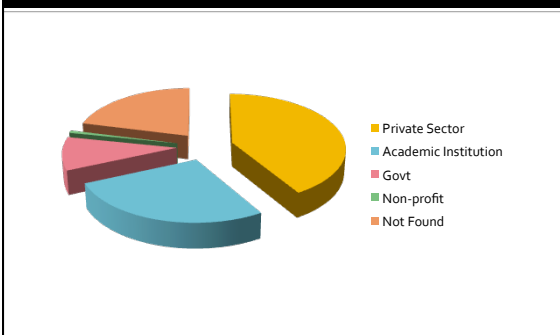
Where are they now?

CAVEAT: I searched the web (including publications, patents, LinkedIn) for individual names that I knew personally. Of 134 that I searched for, 28 I could not find (post-PhD, except in White Pages or Yellow Pages). Also, since Chinese names are very difficult to track when they are not unique, I easily gave up on those cases.

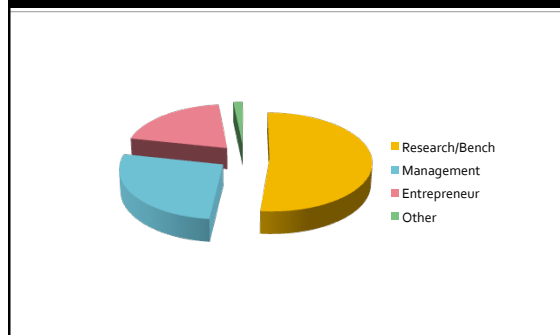
Geographical distribution



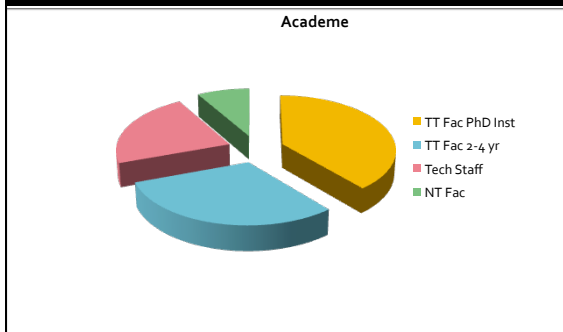
Distribution in Employment Sectors



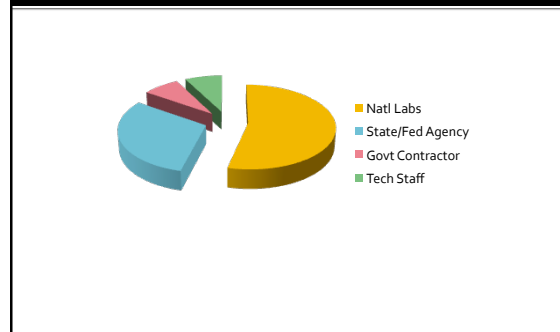
Private Sector



Academic Institutions



Government Sector



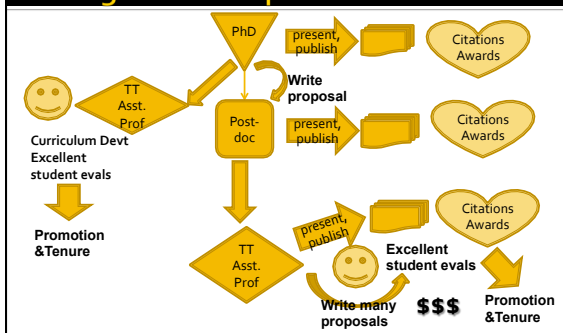
Career Paths



Some pursue other degrees and certificates & licenses along the way

- MBA
- MD
- JD
- PhD in Anthropology
- Secondary School Teaching Cert.
- Patent Agent

In Academic Sector, typically straightforward path



Private Sector

- Some go directly to a job in a big company (GE, Shell, 3M, Dow, ..) and stay until they retire.
- Some start with a small company with a very narrow product line and move from company to company, with increasing responsibility, and finally become part of a big company
- Some do 1 or 2 postdocs before they decide to take a job in the private sector
- Most work in areas not at all related to their Ph. D. thesis in subject or even chemistry subfield, but continue to use the problem-solving approaches they learned as grad students
- Some stay at the bench doing R&D throughout their career; some move into managerial positions after a short time at the bench
- Some end up in non-chemical areas altogether

For Private Sector, career path can be very variable Case Study I

Christopher J. Bieniarz, Ph.D. 1982 (Mock)
Organic Chemistry
Alkali- Induced Decomposition of Cobaloximes

1983 – 2000 Abbott Labs synthesis of inhibitors of various phosphatase enzymes
Site-specific labeling of immunoglobulins, etc
28 patents

2001-present: Ventana Medical Systems (Tucson AZ) (a start-up company, acquired by Roche in 2008)
Senior Director of Discovery: Chemistry, Multiplexed Detection, Molecular Biology technologies and Advanced Staining systems toward cancer diagnostics
43 patents

For Private Sector, career path can be very variable Case Study II

Stuart G. Levy, Ph.D. 1992 (Moriarty)
Organic Chemistry
Chiral catalysis in synthesis of dinucleotides

1992 – 1995 Post-doc UC San Diego: Synthesis of prodrugs cytotoxic nucleotides

1995 – 1998 Scientist, Seres Labs (CA): multistep synthetic routes multigram pharmaceutical intermediates

1998 – 2000 Sugen Inc (CA) estab chemical process devt lab for cytostatic cancer drug

2000 – 2001 Ricerca LLC (OH) process devt for 10-50 kg scale-up

For Private Sector, career path can be very variable Case Study II ...

Stuart G. Levy, continued

2001 – 2005 Epix Pharmaceuticals (MA) Senior Staff Scientist R&D cardiovascular diagnostic agents

2005 – 2008 Elixir Pharmaceuticals (MA) Director, Pharmaceuticals & Manufacturing: Metabolic diseases

2008 – 2010 New Project Sourcing Team, PPD Dermatology (MA): inflammatory & autoimmune skin diseases, develop a candidate at the way to scaled-up outsourcing

2010 – current SGL *Chemistry Consulting, LLC* (MA) Owner and Principal Consultant, to biotech pharmaceutical companies

For Private Sector, career path can be very variable Case Study III

Manouchehr M. Shahbaz, Ph.D. 1984 (LeBreton)
Physical Chemistry Thesis on photoelectron spectroscopy

1984 Post-doc: Geacintov, NYU intercalative complex of pyrene derivs w/ DNA
1986 Post-doc: Grimshaw, Scripps (La Jolla, CA) molecular biology, enzymology, cell biology and cancer research

1988: Ligand Pharmaceuticals (La Jolla, CA): develop biochemical screening assays

Increasing responsibility, research & management, biotech cos.

2001-2008: TransTech Parma (Oak Ridge, NC): patents as sole inventor of methods to identify compounds that modulate RAGE (Receptor for Advanced Glycated Endproducts)

2007: co-founded Auspex Pharmaceuticals (La Jolla, CA), co-inventor of small molecule modulators of various important receptors (19 patents Aug-Dec2009), and pioneer in the use of D-substituted drugs for medical treatment
2010: signed a deal with Teva Pharmaceutical Industries for D-containing drugs

Case Study III Auspex Pharmaceuticals

Manouchehr M. Shahbaz, co-founder & VP of Discovery

Auspex Pharmaceuticals is a pioneer in the use of deuterium in medicinal chemistry, and is focused on the treatment of hyperkinetic movement disorders including Huntington's disease, Tourette syndrome and tardive dyskinesia. Its lead compound, SD-809, is a novel inhibitor of the vesicular monoamine transporter 2 (VMAT-2). This drug offers the potential for significant advantages over existing therapies including improved safety, reduced drug-drug interactions, and less frequent dosing. Auspex is also exploiting its deuterium chemistry approach to optimize drugs in several additional therapeutic areas. Included in the Auspex portfolio are SD-900, a JAK kinase inhibitor for the treatment of autoimmune diseases, and SD-560, for the treatment of fibrotic diseases, as well as other compounds.

For Private Sector, career path can be very variable Case Study IV

Alexandros K. Konstantinides, Ph.D. 1992 (Sinnott)
Organic Chemistry Thesis on hydrolysis of cellobiose

1995-98 Post-doc: Eli Lilly (IN), investigated kallikrein, a marker for prostate cancer
learned protein analytical techniques, phage display technology

1998-2001 Senior Scientist Glaxo Smith Klein (PA) identified targets for broad spectrum antibiotic therapy, mechanistic analyses, cloning

2001-2007: Assoc. Investigator, Abbott Labs (IL), discovered peptidomimetic inhibitors against HIV, led interdisciplinary teams, transition team for clinical trials

2007-2011: Development Assoc II Praxair (IL): commercialization of new technology, market analysis, generate business model

2008-2011: MBA in Finance

2012-present: Senior Scientist Boehringer-Ingelheim (IA) Vaccine manufacturing

Some stay in research, others end up in management

Vice Presidents of companies, large and small

- VP of Business Development, Infiniti Media
- VP of Pharmaceutical Development, Nektar Therapeutics
- VP of Research & Development, Nanogram Devices
- VP of Technical Sales, Nalco Chemical Co.
- VP of Cardiavent, Inc.
- VP of Discovery, Auspex Pharmaceuticals
- VP of Technology, Daubert Chemical Company
- VP of Research & Development, CollPlant, also Pleuristem Therapeutics, Israel
- Senior Regional Medical Liaison, Amgen Scientific Affairs also Senior Medical Science Liaison, Procter&Gamble Pharmaceuticals
- Product Safety Manager, Reckitt Benckiser, Sydney
- Marketing Manager, Dow Chemical Co.
- Global Head of Research & Development, GE Healthcare LifeSciences
- Intellectual Property & Technology Leader, HyClo, Inc.
- Director of Computational Chemistry & Computational Biology
- Manager, Manufacturing Technical Support, Celera
- Production Manager, Emerald Specialties
- Senior Program Manager, Hospira

Some become entrepreneurs

Founders, co-founders, owners

Neil Tomiuk, owner Actol Chemicals, Quebec
 Herbert E. Paaren, owner SAFC, Inc. Madison
 Herbert E. Paaren, co-founder, Cardiavent, Inc.
 Alexander Padva (dec.), Founder and owner of Alex Padva PhD & Associates, environmental consultants
 Terence J. O'Donnell, President, gNova, Inc.
 Manouchehr M. Shahbaz, co-founder and VP of Discovery, Auspex
 Yannis Vlahoyannis, Freelance Consultant
 Scott R. Magnuson, Founder and President, Paradise Genomics
 Igor J. Malik (dec.), co-founder and CTO, HyCLO Inc
 Mary E. Brubaker, owner Mary E. Brubaker Tutoring
 Rina Kobrinskaya Dukor, co-founder and President. BioTools Inc.
 Stuart G. Levy, owner, SGL Chem Consulting
 Daniel Zavitz, co-founder Chicago Semiconductor

Government Sector

Some careers for Ph.D. chemists:

- **Fundamental research as Scientists or Fellows in national labs (typically the same path as faculty in Ph.D. granting institutions)**
- **Technical Staff in national labs and institutes**
- **Technical staff or Managers in regulatory agency or investigative agency (City,State,Fed)**
- **Program officers or directors in federal funding agency**

In the Government Sector

- Director of Inspectorate of the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons (Netherlands): Ichiro Akiyama 1979 (LeBreton)
- Scientist, National Research Centre for Env. Toxicology (Sydney): Arungundrum Prakash 1985 (LeBreton)
- Distinguished Staff Scientist & Grp Leader, OakRidge NL: Mitchel Doktycz 1991 (Benight)
- Scientist, PNNL Kenneth Beck 1988 (Gordon)
- Staff for Domestic Safeguards, New Brunswick Lab (DOE), Paul Croatto 1990 (Keiderling)
- NMR Lab Manager, Natl Inst Env. Hlth Sci, Eugene DeRose 1988 (Gislason)
- NSF Program Officer, Evelyn Goldfield 1983 (Gislason) and Sally Estella 1977 (Walter)
- Principal Researcher, Korean Institute of Ceramic Engineering & Technology (Seoul), HyungMi Lim 1997 (Jameson)

Preparation for entry into these career paths



Department of Chemistry
Fall 2013 seminars
for Graduate Students and Post-docs
Organized by Prof. Luke Hanley, Head

Fall 2013 seminars: PhD→Career

- Sept 12: Introduction, resources for developing your career plan
- Sept 26: Expanding beyond your research
- Oct 10: Optimizing the post-doc experience
- Oct 17: Getting and keeping an academic position
- Nov 7: Exploring the option of industrial careers
- Nov 14: Exploring government careers
- Nov 21: Should you do an internship?

Assignment: Your Individual Career Development Plan

- Choose one of the ICDPs (Scripps, FASEB, UCLA) or customize your own using some elements from each
- Fill out what you can
- Sit down with your primary mentor and discuss your long-term goal
- Identify your individual milestones to achieve your long-term goal
- Figure out the intervening preparation steps toward each milestone
- Bring your ICDP to the Oct. 10 session