

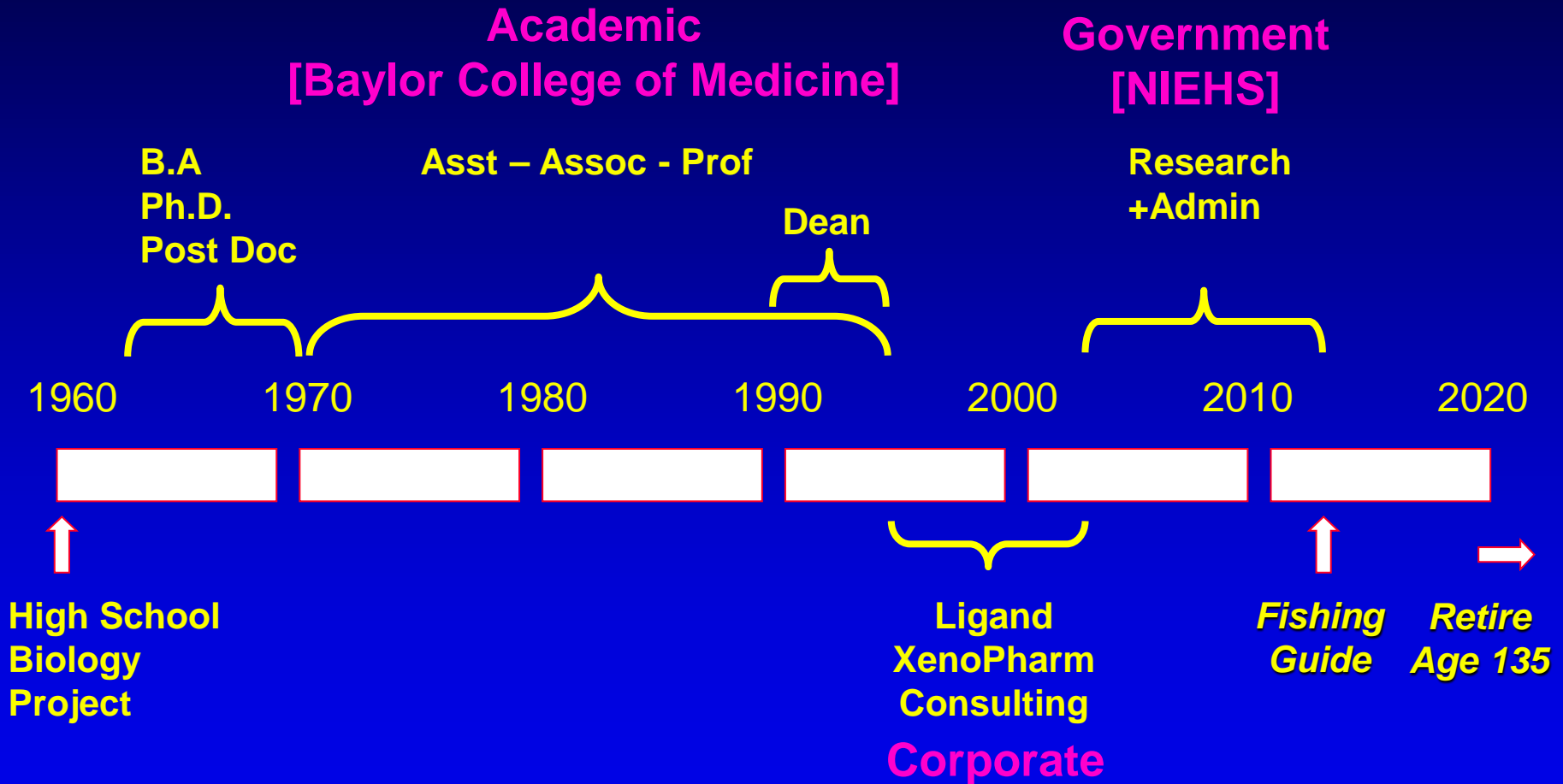
Career Choices: What are Your Options? How to Decide Which Path is Right for YOU

***They're going to hire someone –
it might as well be you***

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"Nothing to disclose"

Schrader Career Timeline



Biological Sciences Career Types

- **Traditional career paths**
 - **Academics: instructor/asst. professor**
 - **Federal or State Government Lab**
 - **Industry**
- **The road less-known to academics**
 - **Computing/data management**
 - **Project management/science administration**
 - **Scientific journalism**
- **Forensics [Esp. with foreign language skills]**
 - **Microbiology, Virology, toxicology**
- **What your mom always wanted you to do anyway**
 - **M.D. – Clinical directions**
 - **J.D. – Intellectual property law**
 - **M.B.A. (esp. night-time executive MBA)**

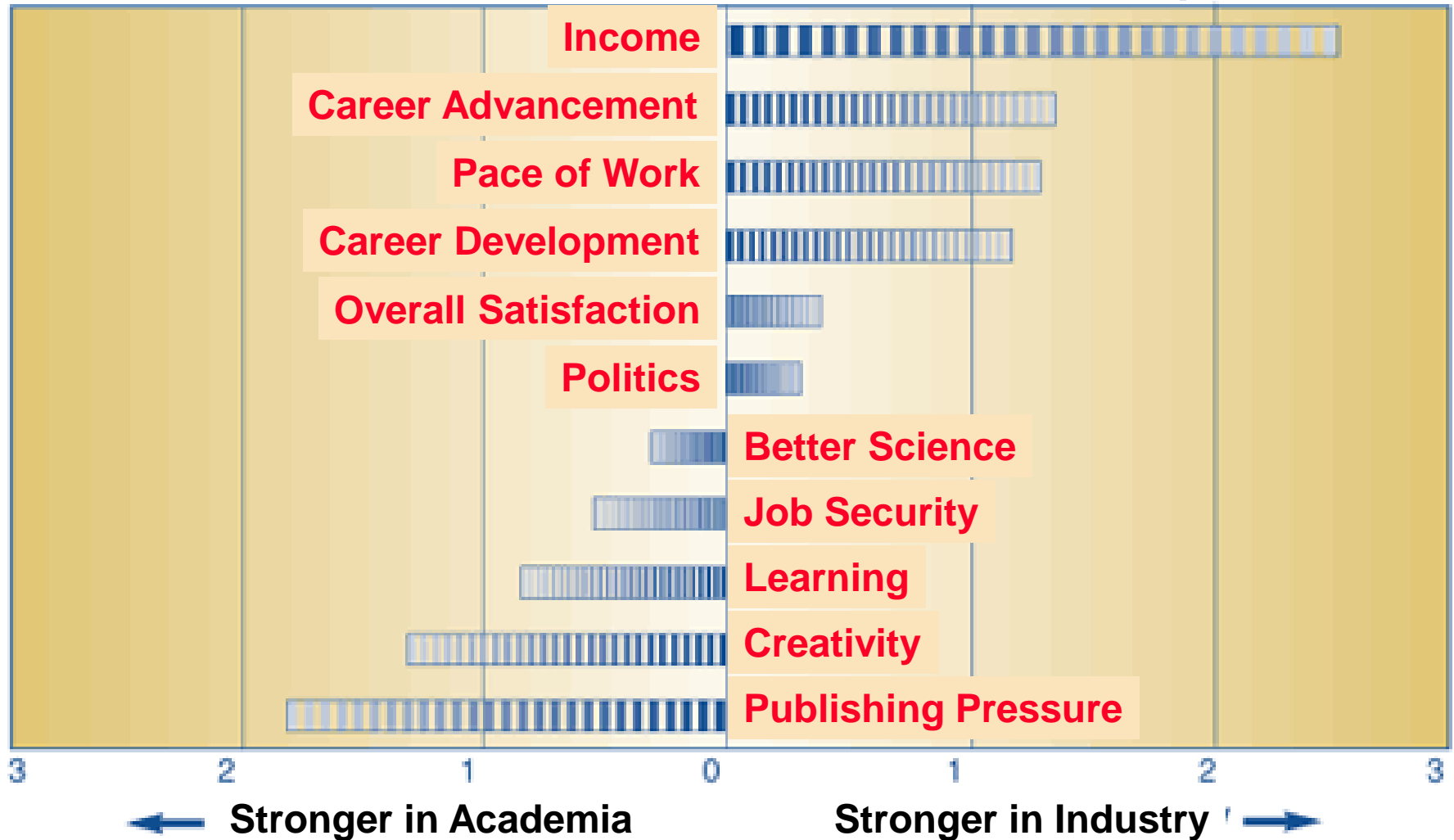
“Non-Research” Doesn’t Mean “Non-Scientific”

- **Non-bench jobs require you to blend science and other skills**
- **Assess your own capabilities and needs**
 - Strengths and weaknesses
 - What do YOU bring to the table?
- **You will probably change directions several times in your life**
 - Some by choice
 - Some by chance

Which path is right for me?

- **The tangible aspects**
 - **Financial**
 - ... Compensation vs. total package
 - **Ability to move around the country**
 - **Work independence**
 - **Scientific creativity**
- **The intangibles**
 - **Team player vs. maverick**
 - **Job stability**
 - **Financial stability**
 - **Time to acquire skill set or additional degrees**
 - **Career interruptions to raise a family**
 - ... Rapidly-moving technology vs. tried-and-true

Criteria for Evaluating Career Parameters



Grimwald, A., *The Scientist* 15:28 (2001)
Duke Careers Beyond Academia 012315

ACADEMICS

The Tenure-track Professorial Route

Academic Research

(Universities, Govt. Research Centers)

- **Good News**

- Freedom to study what you want
- Choice of when to start/stop a line of work
- It's great fun
- Peripatosis: the scientific traveling disease

- **Bad News**

- Grant indecisions
- Publish or perish!
- You must be a self-starter
- You must be a self-promoter
- Long time-lines to get big equipment

Teaching

- **Good News:**
 - Troll for graduate students / lab assistants
 - It's fun
 - It cements your value to the school
 - It forces you to stay up-to-speed in related areas
- **Bad News:**
 - It takes a lot of time
 - You're not paid any more for doing it
 - You don't get much credit for doing it well, but you get reamed if you do it poorly

Service to the School/Department

- **Good News**

- Core lab provides equipment, personnel who can also be used for your research
- Committees (esp. grad. education) give you student access early

- **Bad News**

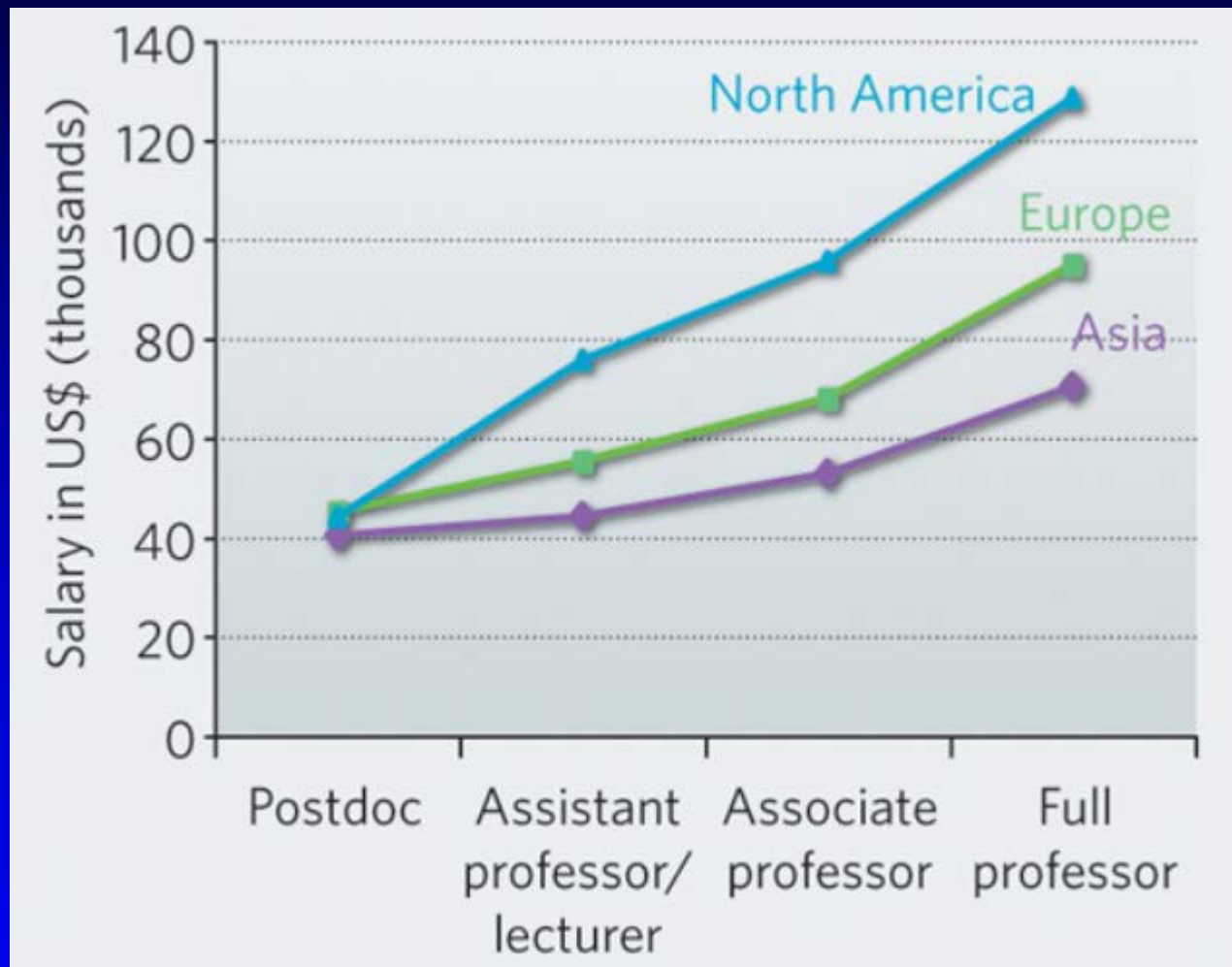
- You have to do a lot of paperwork in support of science for others
- Committees can take a lot of time, especially if the head has little else to do

Typical Startup Packages at Top Med School Basic-Science Departments

- Starting date [Are they sure your lab will be ready?]
- Salary [regionally competitive] and benefits
 - \$100 K range – up if you are highly sought with other offers
- Lab Equipment and Supplies
 - \$300K up depending on cost of equipment
 - You decide how to spend it
 - Have a REALISTIC equipment list ready
 - Defined shared equipment/facilities/core labs/animal space
- Personnel: Technician, Postdoc
- Sometimes a lump-sum: \$500-700K and you decide how to mix people + supplies + equipment
 - If you have a K99/R00 grant – that should be extra
- Duration – 3 years; then you'd better have a grant!
- No teaching in Year 1

Salaries by Academic Career Stage

[~10,000 responses; international]



Caveats - Are these:

- University: 9 months or 12 months?
- Med school: 12 months?
- ... Probably mixed

Source: http://www.nature.com/naturejobs/science/salary_survey/survey

Junior Faculty Job Satisfaction at Colleges & Universities

Nature of work: teaching	
Liberal-arts colleges	Universities
Bowdoin Carleton Holy Cross Davidson	Stanford Brown Dartmouth Duke Harvard
Nature of work: research	
Liberal-arts colleges	Universities
Denison Bowdoin	Dartmouth Brown Notre Dame Illinois Stanford Duke

Work and family	
Liberal-arts colleges	Universities
Hamilton (NY) Carleton Barnard	Illinois Stanford Duke UNC Pembroke
Compensation	
Liberal-arts colleges	Universities
Macalester Carleton Bowdoin	Stanford Duke Dartmouth UConn

Source: Chronicle of Higher Education, December, 2007

The Search Committee will be asking themselves “Can this person....”

- Compete in **science** in your chosen field
- Anchor a **key technology** and/or run a core facility
 - High-resolution imaging, stem cells, bioinformatics
- **Teach** a required course, especially in medical school?
 - Histology, anatomy, pharmacology
 - Team-taught combined approach.
 - Does your work have “clinical relevance” to a first-year medical student?
- Write/think/plan/self-promote well enough to become **fully funded** from external sources within a couple of years and stay that way?

Surviving and Thriving in Academia

Naturejobs Career Expo 2014

- **Follow your passion:** *Research must excite you*
- **Expand your comfort zone:** *Embrace new approaches*
- **Find an advocate:** *Someone who will push for you*
- **Establish collaborations:** *Path to complex science*
- **Jump at opportunities:** *Don't be scared to move*
- **Hone transferable skills:** *Such as informatics*
- **Build name recognition:** *Papers and invited talks*
- **Have a support system:** *Family and friends*
- **Luck:** *Right place, right time*

Source: <http://blogs.nature.com/naturejobs/2014/06/09/surviving-and-thriving-in-academia>

NIH

National Institute of Environmental Health Sciences
Your Environment. Your Health.



THE GOVERNMENT

Public-sector Research

How is an NIH Investigator Different from an Academic Faculty Member?

- **At least occasional lip-service to the “Mission of the Institute”**
 - Disease-oriented
 - Addresses public needs
 - Strive for “high-risk, high-reward research”
- **No formal teaching. No grants to write, fewer committees. Therefore,**
 - Papers! Papers! Papers!
- **Recognition/Rewards**
 - Peer recognition: Invitations to speak at meetings
 - Formal review: Scientific review by external peers

SCIENTIFIC CAREERS IN FOR-PROFIT SETTINGS

Biotech
Big Pharma
Agribusiness

What A Company Hopes to Find

- **TEAM PLAYER**
- **Excellent scientific capabilities**
- **Smart, keeping abreast in the future**
- **Reliable – “on time”**
- **Reliable – ethical, honest, truthful**
- **Good “people skills”**
- **Able to accept criticism and make corrections**
- **Future potential as a leader and manager**

What Does a Scientist in a Company Do?

| Good News

- Teamwork
- Fewer pressures to publish
- Planned approach
- No budget problems
- Access to new methodology
- Stock options, salary

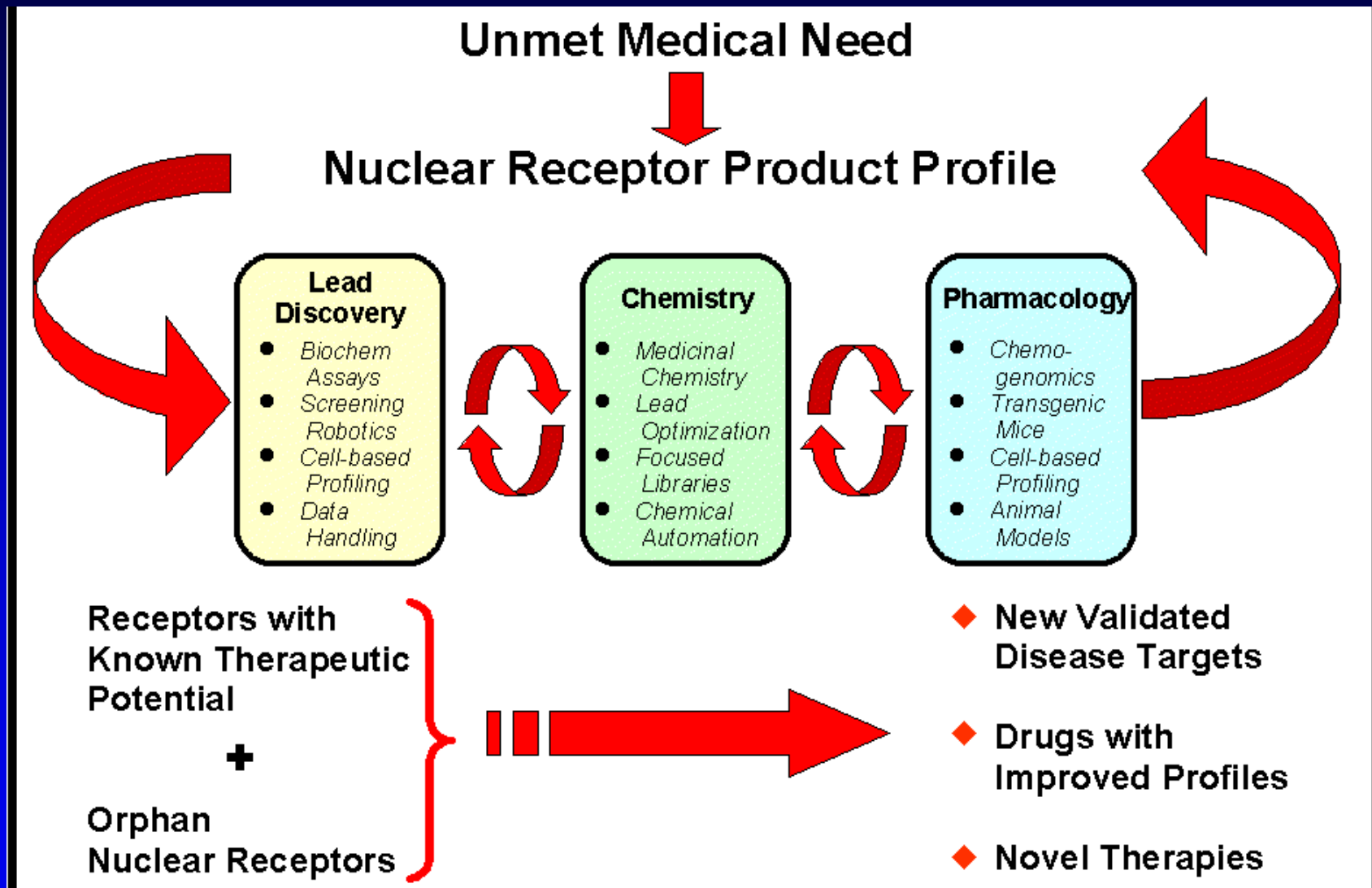
| Bad News

- Shared science
- Can't publish the hot stuff
- More paperwork
- Deadlines
- Ultimate control by non-scientists
- No students, fellows

What's it Like to Work in a Pharmaceutical Company?

- What's it like to work in any company?
 - Ans: Read Dilbert every day
- What's it like doing drug discovery research?

Pharmaceutical Team Research Example: A Nuclear Receptor Drug Discovery Pipeline



The Search Committee will be asking themselves “Can this person....”

- **IN ACADEMICS**

- **Compete in science** in your chosen field
- **Anchor a key technology** and/or run a core facility
- **Teach a course**, especially an entry-level requirement
- **Self-promote** to attract attention, fellows and grants
- **Publish** often and well
- **Become fully funded** and stay that way?

- **IN A BUSINESS**

- **Know a competitive scientific field**
- **Anchor a key technology** and/or run a process
- **Communicate effectively** by both oral and written means
- **Get along** in a team environment
- Plan and **meet timelines**
- Do work that **makes money for shareholders**

Typical Startup Package at a Company

[Usually with a firm “drop-dead” date]

- **Salary, benefits and other financials [not negotiable, really...]**
- **Your title and headcount who will be assigned to you**
- **Specific technology and/or processes you are to anchor, e.g.,**
 - **Mouse apo E transgenic bioassay**
 - **“Head the lentivirus vectors core facility”**
- **Membership on committees and/or teams, e.g.:**
 - **“The stem cell therapeutics team”**
 - **“The Pfizer Anti-anxiolytics project”**

Distinctions Between the Success Ladder in Academics and Business

- **Academics (Look DOWN)**
 1. How big is your group?
 2. How many papers have you published?
 3. Do you get invited to a lot of meetings?
 4. Do you have lots of grants?
- **Business (Look UP)**
 1. Who do you report to?
 2. Have you increased the stock price?
 3. What is the dollar amount of your signing authority?
 4. Do you sit on committees that make the key decisions?

THE BUSINESS TRACK

**What do you get to do with an MBA that you
can't do without it?**

Scientific/Management Arena

- **Business Development**
 - New technology assessment
 - Licensing & Alliances
- **Operations Management**
 - Strategic Planning
 - Competitive Marketing Analysis
 - New Product Development
- **Finance**
 - Financial Analysis
 - Venture Capital options
 - Entrepreneurial Endeavors

Comparing Apples and Oranges

Life is Choices

PARAMETER	INDUSTRY	ACADEMIC
Goal	Products	Research Results
Stress	Same	Same
Satisfaction	Depends	High
Sci. Indep.	Lower	Higher
Res. Finances	Stable	Variable
Personality	Team Player	Maverick
Risk	High	High
Fun	Moderate	High
Publishing	Some	Must
Public Forum	Not imp.	Important

FAQ 1

- **How will biotech/pharma evolve in the next 10 years and what skills will be necessary to land the biotech job of the future?**
 - **IMHO: The big push will involve Big Data, personalized medicine and genetics. e.g.,:**
 - ...Learn to do computational bioinformatics
 - ...Role of the microbiome [“gut flora”] in modulating responses to disease and therapy
 - ...Regenerative therapy– stem cells, other reversal of phenotype

FAQ 2

- **What do you think is the most important factor(s) in determining a career path?**
 - **IMHO: Luck, timing and contacts**
 - ... You must be broadly trained
 - ... You must be willing to leap when offered the chance
 - ... “What good are friends if you can’t use the sonsabitches?”

FAQ 3

- **Is being geographically restricted a major problem for finding biotech jobs if in a large research area such as RTP?**
 - **IMHO: Yes, it certainly is a major problem. This is NOT a “large research area” for biotech.**
 - ...Limits your options
 - ...Limits your bargaining power
 - ...BUT: Forces you to think outside-the-box: What else can you do?

FAQ 4

- **What advice would you give someone looking to relocate out-of-state and enter the industry or government sectors?**
 - **IMHO: Look as broadly as possible.**
 - ...The next job won't be your last. Try to pick places that are as urban as possible, so that there are the most networking opportunities
 - ...Be willing to go anywhere.
 - ...“Trailing Spouse” – discuss with partner who follows whom.

FAQ 5

- **How important is a postdoc in securing an industry or government research position?**
 - **IMHO: Essential except in very specific fields or situations**
 - ...Ex.: Computing expertise
 - ...Ex.: Medicinal chemistry [i.e., drug synthesis] – but uncommon even there.
 - ...NIH “Early Independence Award” Program – very few