A view of the industry job market for scientists

Marc Bonnefoi, Sanofi R&D
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Discussion Topics

• The evolution of R&D in the pharmaceutical industry
• Current and future roles for scientists in pharma R&D
Our Evolution

before 2011  2011-2015  2016-2020

CLASSICAL R&D MODEL

Target

Drugability

Disease

1st try

Disease

2nd try

...
Our Evolution

before 2011 2011-2015 2016-2020

CLASSICAL R&D MODEL

TARGET

Disease

Drugability

1st try

2nd try

TRANSLATIONAL R&D MODEL

Disease

Mechanism

Drugability

Target
Our Evolution

before 2011

2011-2015

2016-2020

CLASSICAL R&D MODEL

TRANSLATIONAL R&D MODEL

Development-to-Research Strategy

- Created a robust launch pipeline
- Relied on external heavily
- Increased flexibility
- Developed biologics
Our Evolution

**before 2011**  
**2011-2015**  
**2016-2020**

**TRANSLATIONAL R&D MODEL**

**CLASSICAL R&D MODEL**

**Development-to-Research Strategy**
- Created a robust launch pipeline
- Relied on external heavily
- Increased flexibility
- Developed biologics

**Strengthen Research Productivity**
- Rebalance portfolio to at least two thirds internal
- Multi-targeting approach
- Strengthen excellence
- Leverage digital
Driving Breakthroughs with Innovative Scientists
A look at R&D job segmentation

<table>
<thead>
<tr>
<th>FAMILIES</th>
<th>Approx. % of total in US*</th>
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<tbody>
<tr>
<td><strong>R&amp;D LAB</strong></td>
<td>50%</td>
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<tr>
<td><strong>CLINICAL DEVELOPMENT</strong></td>
<td>30%</td>
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<tr>
<td><strong>R&amp;D MANAGEMENT &amp; LEADERSHIP</strong></td>
<td>6%</td>
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<tr>
<td><strong>R&amp;D TRANSVERSAL</strong></td>
<td>8%</td>
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<tr>
<td><strong>R&amp;D QUALITY</strong></td>
<td>6%</td>
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* Sanofi R&D, n ~ 2000
A look at R&D job segmentation

FAMILIES

R&D LAB
CLINICAL DEVELOPMENT
R&D MANAGEMENT & LEADERSHIP
R&D TRANSVERSAL
R&D QUALITY

SUBFAMILIES
(exemples)

R&D TOP MANAGEMENT
DISEASE AREA SCIENTIFIC LEADERSHIP
SENIOR OPERATIONAL MANAGEMENT
A look at R&D job segmentation

**Families**
- R&D LAB
- CLINICAL DEVELOPMENT
- R&D MANAGEMENT & LEADERSHIP
- R&D TRANSVERSAL
- R&D QUALITY

**Subfamilies**
- R&D TOP MANAGEMENT
- DISEASE AREA SCIENTIFIC LEADERSHIP
- SENIOR OPERATIONAL MANAGEMENT

**Segments**
- DA Scientific Leadership Research
- DA Scientific Leadership Development
- MD/PhD with postdoc +++
Most needed skills across R&D

- **R&D Lab**
  - Data Science, Artificial Intelligence & Machine learning
  - Immunology
  - Biologics experience
  - Translational Medicine

- **Clinical Development**
  - In silico modeling
  - Protein engineering
  - Devices and delivery
  - Analytical development
  - Biomarkers

- **R&D Transversal**
  - Risk management
  - Regulatory knowledge
  - Continuous improvement methods
  - Business acumen

- **R&D Top Management & Scientific Leadership**
  - Project management
  - Scientific leadership
  - Alliance management
  - Networking

**Transversal Scientific & Technical Skills**

**Leadership**
- Collaborative mindset
- Transparency, Knowledge sharing, Communication

**Family Specific Skills**

- % PhD among expected new recruits (approx.)
  - 40%
  - 20%
  - 10%
  - 100%
Other considerations

- Some areas particularly rich in PhDs (>50%):
  - Translational science
  - Pharmacokinetics and drug metabolism
  - Pharmaceutical development
  - Biostatistics

- Postdoctoral training is generally considered as a plus

- Experience is key. Many Pharma have strong training programs

- Internal postdoctoral programs

- Opportunity to move from Pharma to Pharma is significant, and rewarding
A look at R&D job segmentation

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<tr>
<td>R&amp;D LAB</td>
<td>CHEMISTRY &amp; ANALYTICAL CHEMISTRY</td>
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<td>IN SILICO DRUG DESIGN &amp; SIMULATIONS</td>
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<td></td>
<td>BIOLOGY &amp; BIOTECHNOLOGY</td>
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<td>IN VIVO &amp; IN VITRO PHARMACOLOGY</td>
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<td>DRUG METABOLISM &amp; PHARMACOKINETICS</td>
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<td>DRUG SAFETY</td>
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<td>DP FORMULATION &amp; MANUFACTURING</td>
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