

A typical career in Chemical Science at AstraZeneca

My background

- MSci in Chemistry with Industrial Experience from University of Bristol (1998 – 2002)
- Industrial placement in medicinal chemistry at GlaxoSmithKline, Stevenage (2000 – 2001)
- PhD in organic methodology from University of Cambridge (2003 – 2006)
- Senior Scientist in Pharmaceutical Development, AstraZeneca (2007 – present)



Pharmaceutical Industry

- The pharmaceutical industry is the source of over 90 percent of medicines.¹
- Around 20 per cent of the world's top medicines were discovered and developed in Britain.²
- One third of the population of Great Britain has a chronic or long-term illness (over 70% of those >75 years), so there is still work to do.³
- AstraZeneca is one of the world's leading pharmaceutical companies.

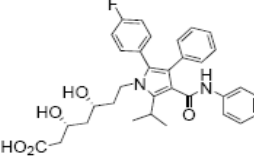
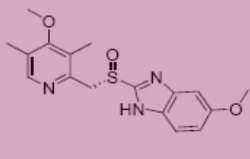
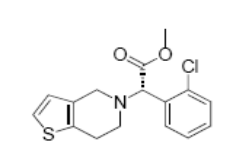
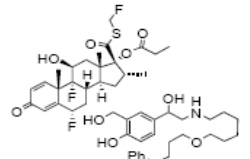
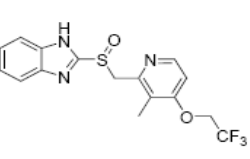
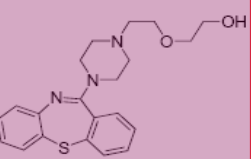
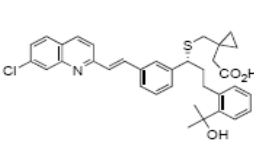
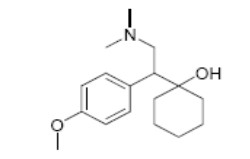
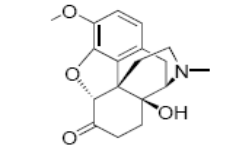
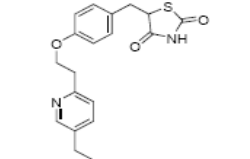
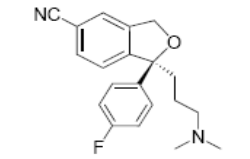
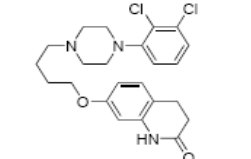
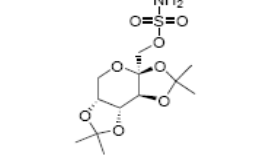
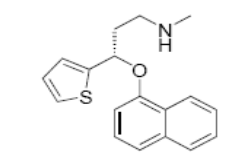
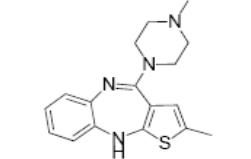
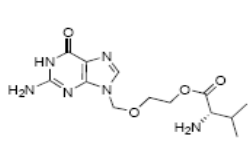
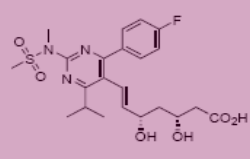
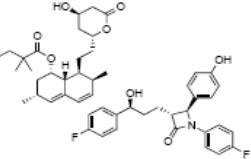
1. EFPIA. The Pharmaceutical Industry in Figures, 2007 Update

2. ABPI. Facts and Figures of the Pharmaceutical Industry. Facts and Figures of the Pharmaceutical Industry (www.abpi.org.uk; accessed 26 January 2010)

3. ABPI. The Pharmaceutical Industry (www.abpi-careers.org.uk; accessed 26 January 2010)



Pharmaceutical Industry

<p>1 Lipitor</p>  <p>2007 Rank: 1 Company: Pfizer 2008 Sales: \$5.88 Billion</p> <p>Profile: An HMG-CoA reductase inhibitor used to lower LDL cholesterol levels.</p>	<p>2 Nexium</p>  <p>2007 Rank: 2 Company: AstraZeneca 2008 Sales: \$4.79 Billion</p> <p>Profile: A proton pump inhibitor used to treat heartburn and esophagitis.</p>	<p>3 Plavix</p>  <p>2007 Rank: 5 Company: Bristol-Myers Squibb 2008 Sales: \$3.80 Billion</p> <p>Profile: A platelet aggregation inhibitor used to reduce stroke and heart attack risk.</p>	<p>4 Advair Diskus</p>  <p>2007 Rank: 3 Company: gsk 2008 Sales: \$3.57 Billion</p> <p>Profile: A corticosteroid and a bronchodilator used to treat and prevent asthma.</p>	<p>5 Prevacid</p>  <p>2007 Rank: 4 Company: TR 2008 Sales: \$3.30 Billion</p> <p>Profile: A proton pump inhibitor used to treat gastric reflux disease.</p>	<p>6 Seroquel</p>  <p>2007 Rank: 7 Company: AstraZeneca 2008 Sales: \$2.91 Billion</p> <p>Profile: An antipsychotic used to treat schizophrenia and bipolar mania.</p>
<p>7 Singular</p>  <p>2007 Rank: 6 Company: MERCK 2008 Sales: \$2.90 Billion</p> <p>Profile: A leukotriene receptor antagonist used to treat asthma and allergies.</p>	<p>8 Effexor XR</p>  <p>2007 Rank: 8 Company: Wyeth 2008 Sales: \$2.66 Billion</p> <p>Profile: A serotonin and norepinephrine reuptake inhibitor used to treat depression.</p>	<p>9 OxyContin</p>  <p>2007 Rank: 33 Company: PURDUE 2008 Sales: \$2.50 Billion</p> <p>Profile: An opioid analgesic used to treat moderate to severe pain.</p>	<p>10 Actos</p>  <p>2007 Rank: 10 Company: Lilly 2008 Sales: \$2.45 Billion</p> <p>Profile: A thiazolidinedione used to treat type 2 diabetes.</p>	<p>11 Lexapro</p>  <p>2007 Rank: 9 Company: Forest Laboratories, Inc. 2008 Sales: \$2.41 Billion</p> <p>Profile: A selective serotonin reuptake inhibitor used to treat depression and anxiety.</p>	<p>12 Abilify</p>  <p>2007 Rank: 15 Company: Otsuka 2008 Sales: \$2.37 Billion</p> <p>Profile: An antipsychotic used to treat schizophrenia and bipolar mania.</p>
<p>13 Topamax</p>  <p>2007 Rank: 13 Company: Johnson-Johnson 2008 Sales: \$2.18 Billion</p> <p>Profile: A carbonic anhydrase inhibitor used to treat seizures and prevent migranes.</p>	<p>14 Cymbalta</p>  <p>2007 Rank: 16 Company: Lilly 2008 Sales: \$2.17 Billion</p> <p>Profile: A serotonin and norepinephrine reuptake inhibitor used to treat depression.</p>	<p>15 Zyprexa</p>  <p>2007 Rank: 18 Company: Lilly 2008 Sales: \$1.75 Billion</p> <p>Profile: A thienobenzodiazepine used to treat schizophrenia and bipolar mania.</p>	<p>16 Valtrex</p>  <p>2007 Rank: 22 Company: gsk 2008 Sales: .68 Billion</p> <p>Profile: An antiviral agent for treating shingles, cold sores, and genital herpes.</p>	<p>17 Crestor</p>  <p>2007 Rank: 23 Company: AstraZeneca 2008 Sales: \$1.68 Billion</p> <p>Profile: An HMG-CoA reductase inhibitor used to lower LDL cholesterol levels.</p>	<p>18 Vytorin</p>  <p>2007 Rank: 12 Company: MERCK 2008 Sales: \$1.55 Billion</p> <p>Profile: A statin and a cholesterol absorption blocker used to treat high cholesterol.</p>



Senior Scientist role in Chemical Science, AstraZeneca

Develop processes used to manufacture drug substance for clinical trials, from 500 g to 500 kg!

- Drug substance: The “active ingredient” in a drug
- Drug product: The formulated product, eg tablet or capsule



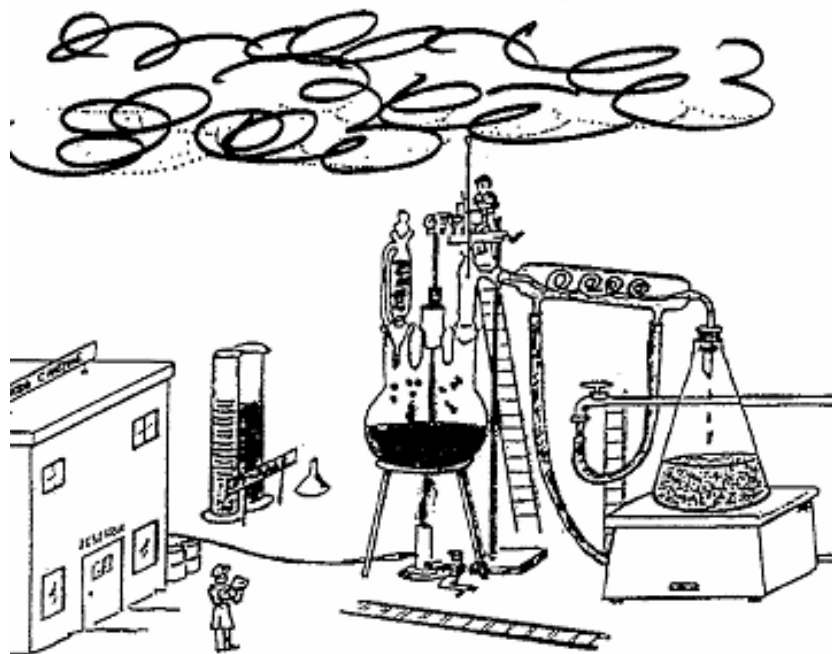
Senior Scientist role in Chemical Science, AstraZeneca

Develop processes used to manufacture drug substance for clinical trials, from 500 g to 500 kg!

- Route selection
- Process development
- Process optimisation
- Process validation
- Manufacturing support
- Scale up processes from lab to plant ensuring robustness, consistency, cost-efficiency, safety and compliance**



Senior Scientist role in Chemical Science, AstraZeneca

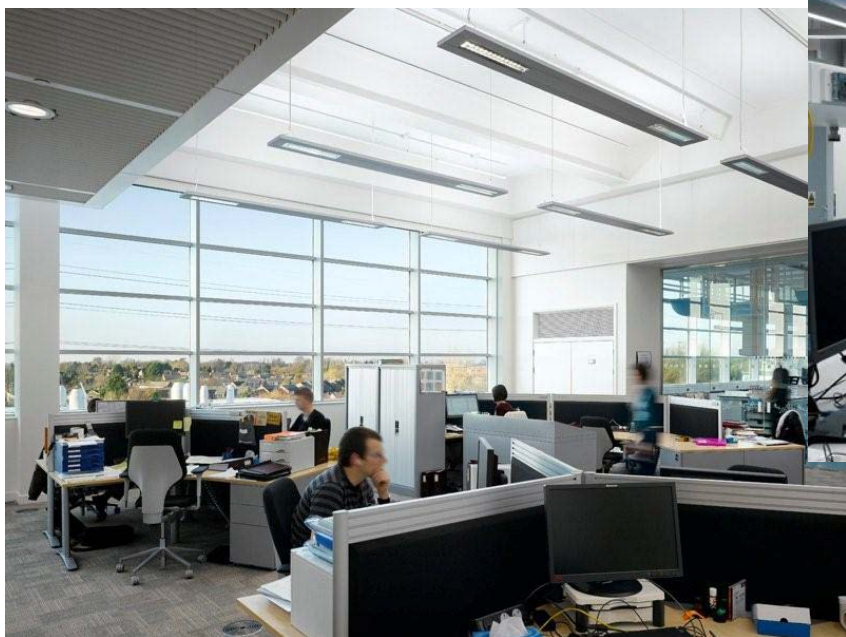


The lab results were so good
we bypassed Process Development



A typical day as a Senior Scientist in Chemical Science

in the lab...



...the office



...& on plant



A typical day as a Senior Scientist in Chemical Science

Varied Role – daily collaboration with:

- Process Engineers
- Analytical Chemists
- Process Safety
- Crystallisation Scientists
- Formulation Scientists
- Project Managers
- Outsourcing Companies
- Quality Assurance



A typical day as a Senior Scientist in Chemical Science

Varied Role – daily collaboration with:

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Enthusiasm for and understanding of organic chemistry is essential!



Discovering and launching a new pharmaceutical costs time and money!

