

# SCI Career Options Seminar

## My Career in the Pharmaceutical Industry

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## 1998-2002 - Degree

UNIVERSITY *of* York

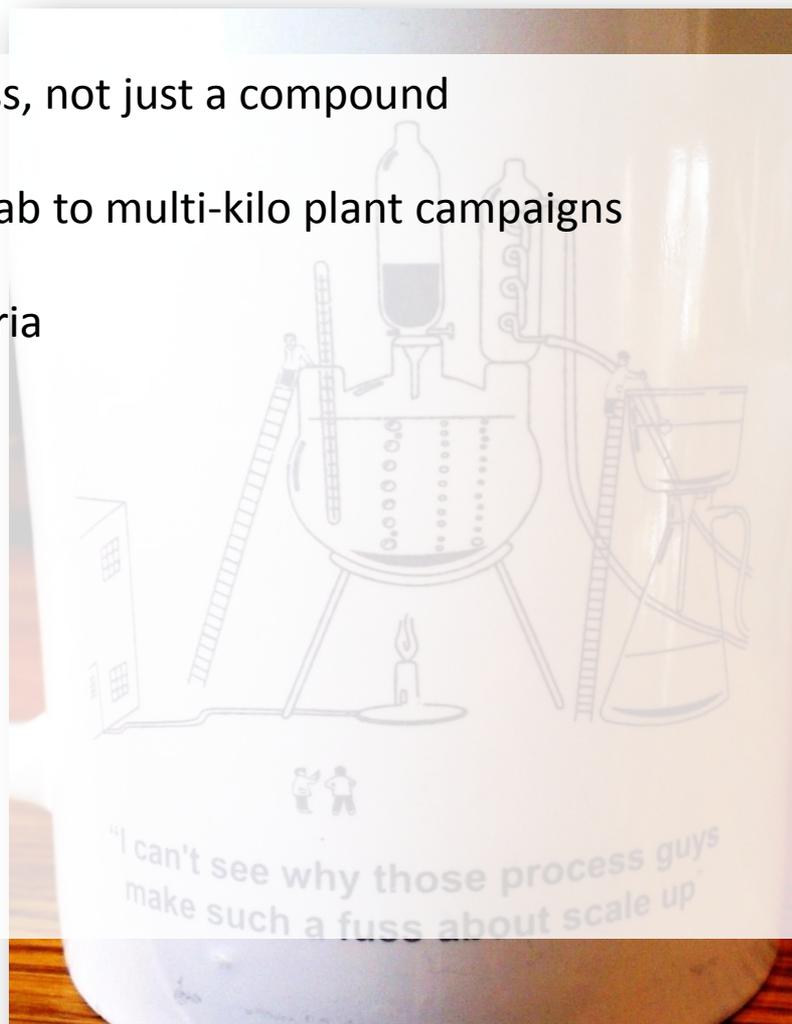


- MChem. Undergraduate at University of York
- Final year industrial placement at Pfizer
  - Chemical R&D (Chemical Development)
  - Working on a live drug project being manufactured at large scale (20L to 600L)
  - Final year project on catalytic cross coupling reactions
  - Suzuki on the manufacturing route
  - Stille, Kumada, Negishi on impurity synthesis
- Applied/offered 2 jobs in early 2002
  - Medicinal Chemistry – Pfizer (Sandwich)
  - Chemical Development – AstraZeneca (Macclesfield)



# 2002-2006 - Project Chemist in Chemical Development

- Produce a scalable process, not just a compound
- From a few grams in the lab to multi-kilo plant campaigns
- Emphasis on SELECT criteria
  - **S**afety
  - **E**conomics
  - **L**egal
  - **E**nvironment
  - **C**ontrol
  - **T**hroughput



# 2002-2006 - Project Chemist in Chemical Development



Development Lab  
100mg to 100g



Large Scale Lab  
1Kg – 10Kg



Pilot Plant  
10Kg – 50Kg

- Worked on 5 projects – responsibility for 1 or more transformations
- Scaled up into LSL - 3 processes
- Scaled up to Pilot Plant - 2 processes
- 6 month secondment to LSL and PP (night shifts!)



# 2006 - Present – Automation Leader in Chemical Development

- Pressure to do more with less, but not work harder!
- Parallel synthesis – not just in Med Chem.

Initially

- Supporting chemists running existing parallel synthesis equipment



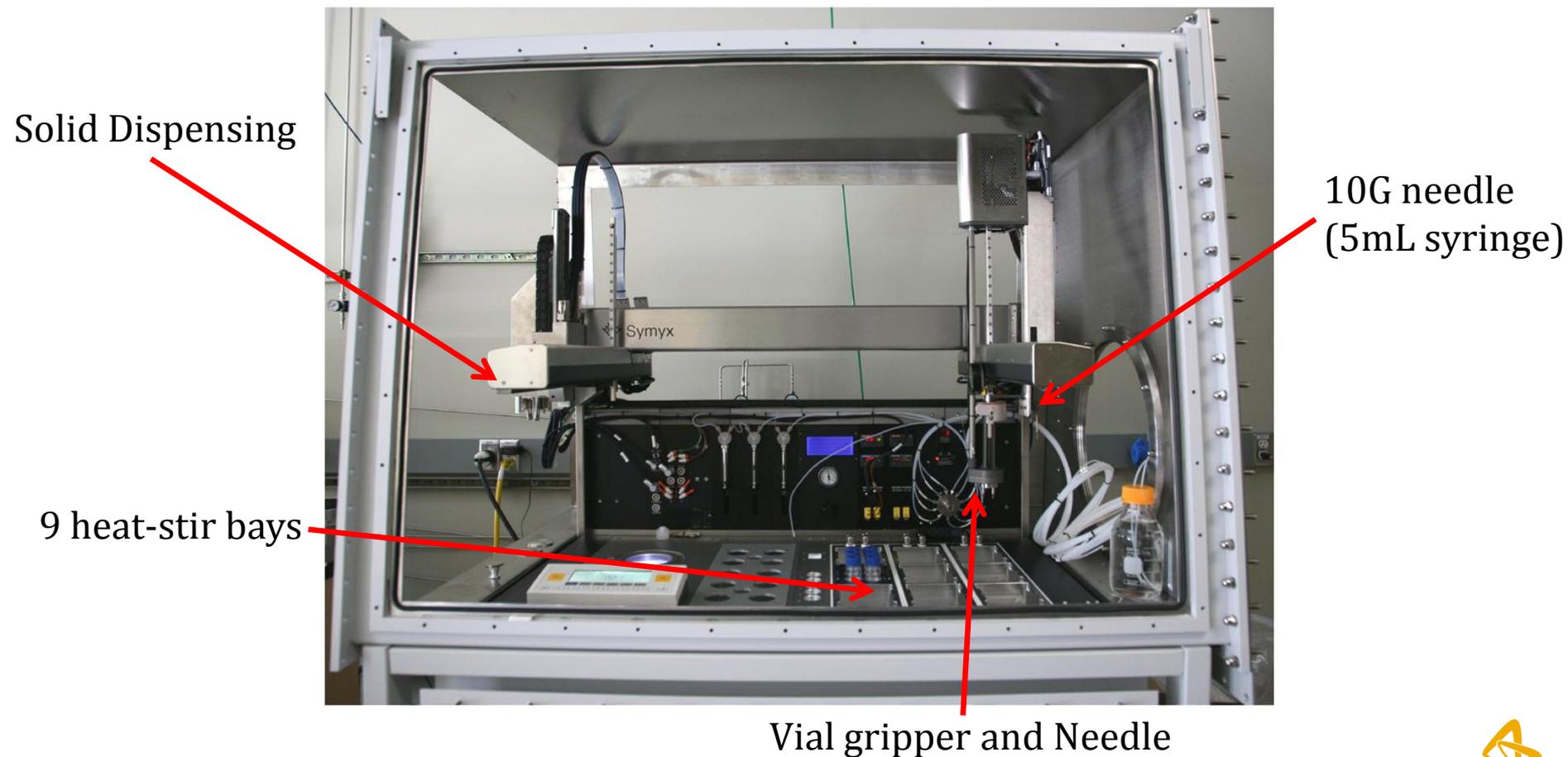
Key skills

- Understanding Chemists (Chemistry) requirements
- Planning
- Support
- Coaching



## 2006 - Present – Automation Leader in Chemical Development

- Can we do more?
- 96 reactions at once?
- Lead a team that spent ~\$1M on purchase of a deck robot



## 2006 - Present – Automation Leader in Chemical Development

- 2007 – Removal of metals
- 2008 – Developed kit further to run cross coupling chemistry
- 2013 – Project technical lead for a further \$1.7M to run Asymmetric Hydrogenation
- Our team now supports whole chemistry community at AZ

Pre-screening  
~10 reactions

96-well plate  
screening

Optimisation of  
continuous  
parameters  
DoE (24-plate)



# 2006 - Present – Automation Leader in Chemical Development



# 2006 - Present – Automation Leader in Chemical Development

Scatter Plot



# 2006 - Present – Automation Leader in Chemical Development

## Key skills

- Setup
  - Evaluation of equipment and workflows
  - Purchasing process
  - Testing and installation of kit
  - Demonstrating ROI
- Running Screens
  - Planning - making sure the correct reactions are being run
  - Programming - making the robots do what you want them to!
  - Execution - orders of addition, stock solution prep, hold times.....
  - Analysis – Impurities galore, use of LC-MS
  - Use of data, generate 1000s data points during each run, visualise and reuse



# What I Like/ Don't Like About My Role

- Making molecules that lead to medicines that alleviate / cure some pretty horrific diseases
- Supporting projects across whole portfolio
  - See a wide range of transformations / challenges
  - Making real changes to synthetic routes – saving millions of dollars
- Managing the masses of data
  - We do lots of experiments, capture learning from each one
- Programming, using and developing cutting edge technologies
  - Always trying to push the boundaries of what we can do
  - Being supported (\$) to do so!
- Big corporations take a long time to change
- IT gripes
- Projects dying



# Reflections after 11 years...

- Industrial Chemistry isn't just big plants running massive processes
- Pharmaceutical chemistry isn't just small scale med. chem. synthesis
  
- Your chemistry degree is just the start
  - On the job training is as important
  - Interpersonal, IT and presentation skills are vital
  
- Follow what you're interested in
  - If you don't know, find out.
  - Be prepared to make a leap of faith occasionally
  
- Your career is what you make of it, there is no 'big plan' in place.
  - Make connections and contacts, no matter how random they seem (LinkedIn!)
  - Keep your eye on the outside world and look to apply best practices

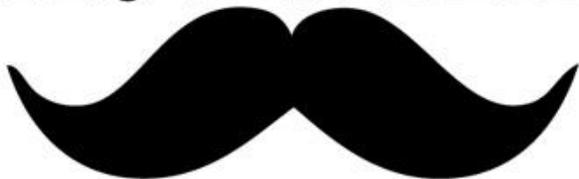




## Questions

\* Poor attempts at facial hair not a prerequisite for an industrial chemistry career

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