



UNICA STUDENT WEBINAR

“PHARMA AND BIOTECH CAREERS IN EUROPE (PART I)”

Opportunities in Drug Discovery

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AstraZeneca: global dimensions

For year ending 31 December 2019

\$24.4bn

Total Revenue
(Up 10% in 2019)

\$6.1bn

Invested in R&D with research
across six countries

28

NME approvals in 2019

70600

Employees



Gothenburg

Gothenburg key facts:

2400
Employees

2000
Scientists from 50 countries
600 with PhD
30 Professors

Target biology

Medicinal chemistry

Translational science

Personalised healthcare

Pharmaceutical
development

Clinical development



Two organisations. One aim.

- Increased focus on main therapy areas
- Agile decision-making and resource allocation
- Collaboration between R&D and business

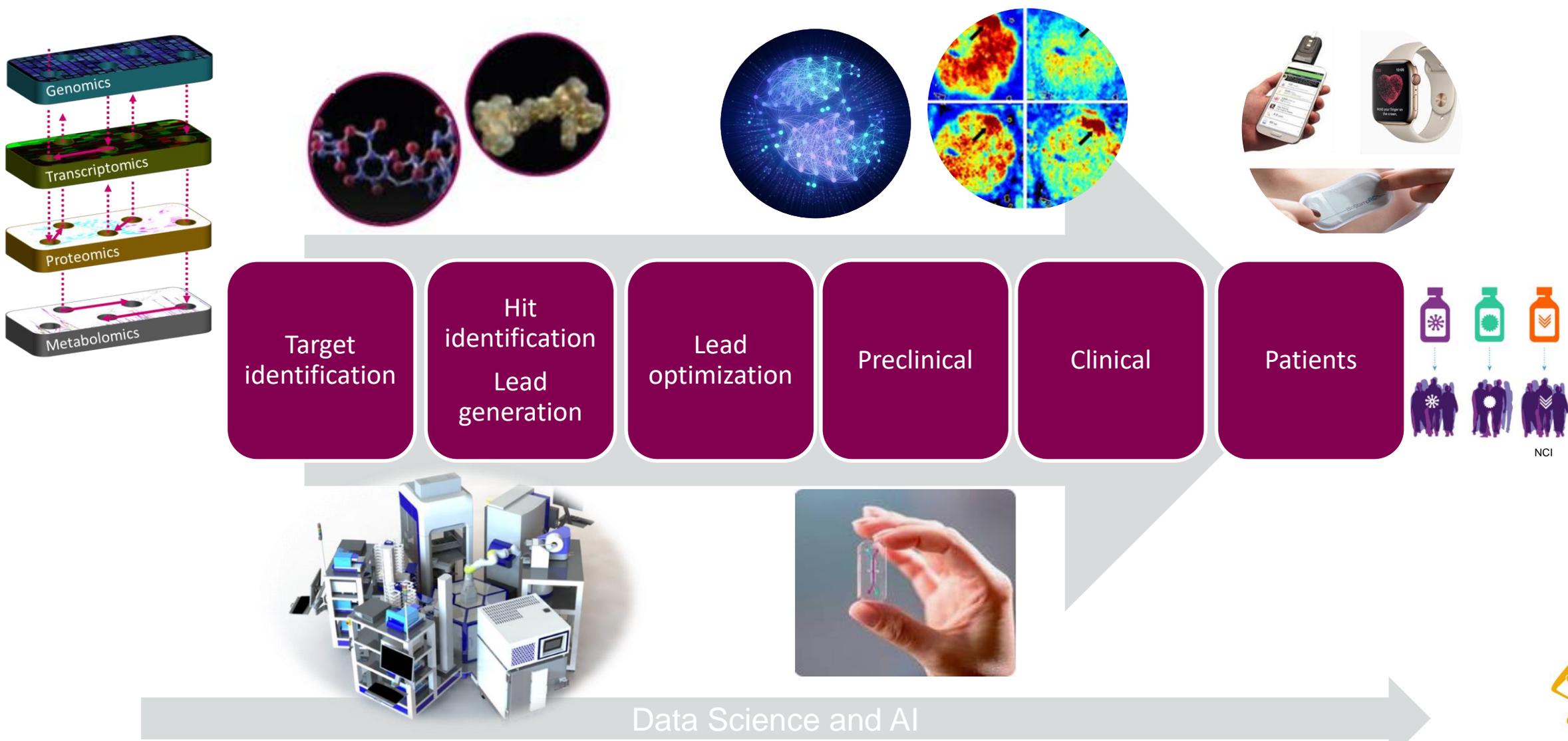


Opportunities in many shared functions



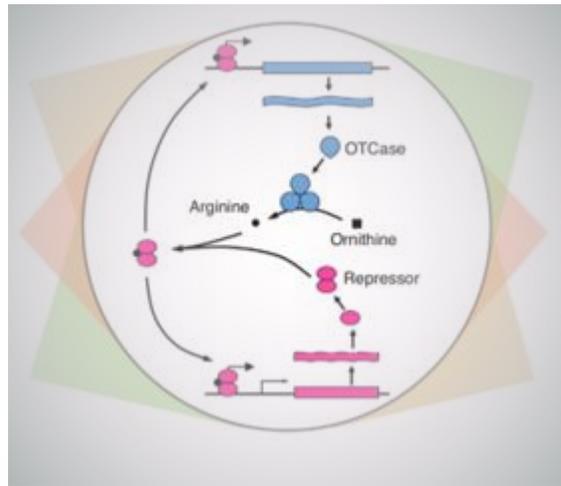
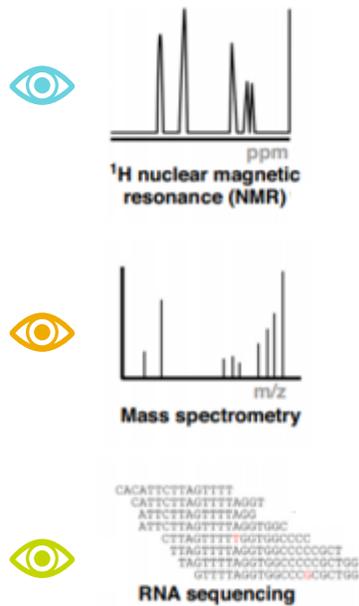
Delivering life-changing medicines to patients

...Growth Through Innovation Investments



OMICS to identify new targets...

- To understand their mechanism of action
- To detect on target or drug induced side effects



Adapted from *Drug Discovery Today*, 2020, 25, 3, 519

Transcriptomics

Disease mechanisms
Mode of action of compounds
Moving from disease genes to drug targets
Identification/evaluation of drug target candidates
Early prediction of adverse drug target effects

Proteomics

Post-translational process
Protein network interactions
Drug target efficacy and safety evaluation
Protein toxicology

Metabolomics

Metabolic toxicity

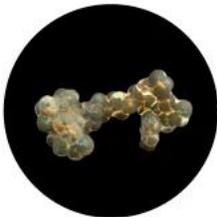


Creating next generation therapeutics

SMALL MOLECULES



Small molecules



PROTACs

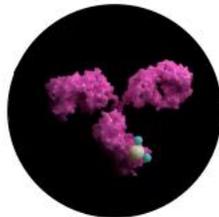


Zirconium cyclosilicate

ANTIBODY THERAPEUTICS



Monoclonal antibody



Antibody drug conjugate

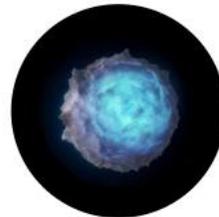


Bispecific antibody

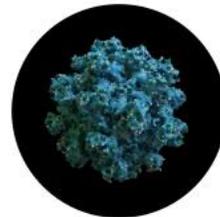


Fragment antibody

CELL BASED THERAPEUTICS



Cell therapy



In vivo expressed biologics (IVEBs)

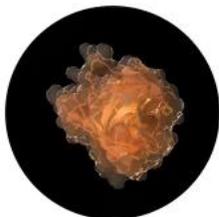
PEPTIDE OR PROTEIN THERAPEUTICS



Therapeutic proteins



Peptides

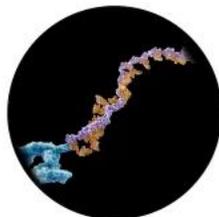


Anticalin[®] protein

NUCLEOTIDE-BASED THERAPEUTICS



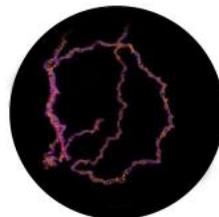
Antisense oligonucleotide



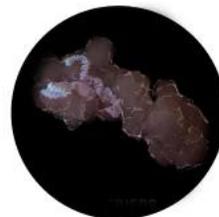
Oligonucleotide conjugate



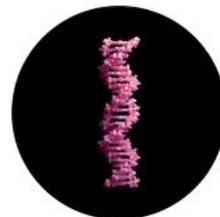
siRNA



mRNA



Therapeutic gene editing

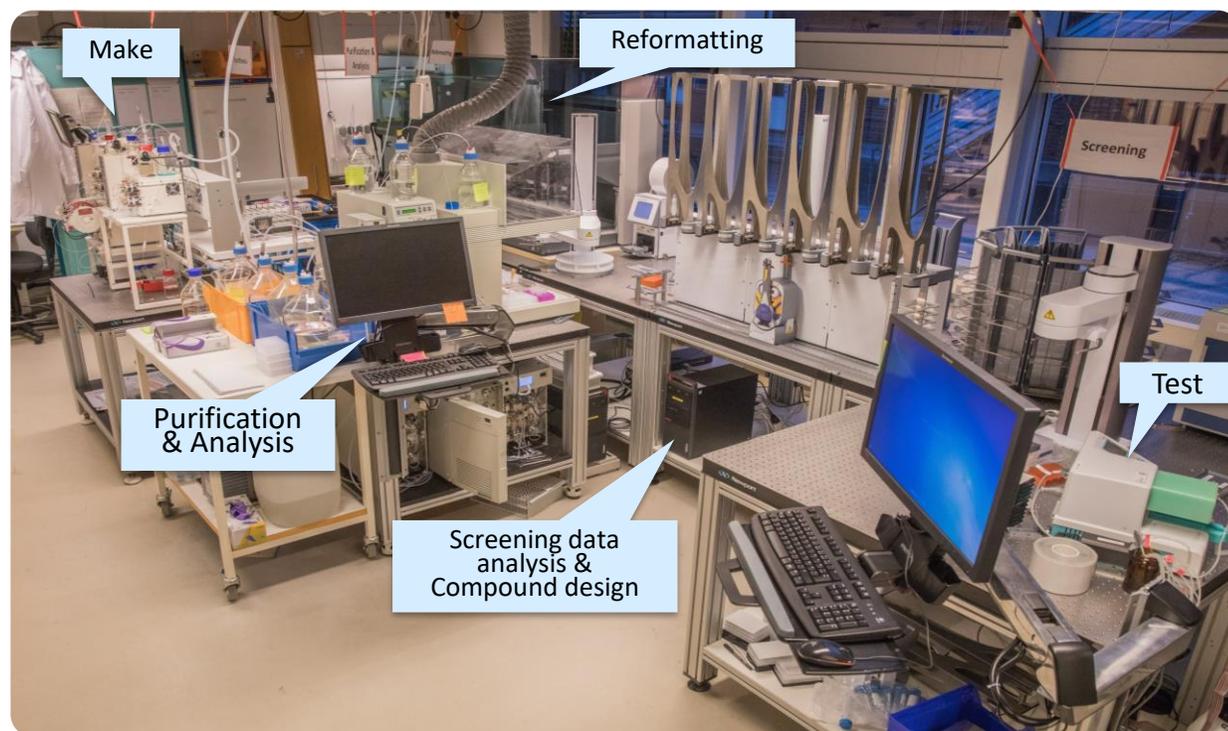


DNA



Automation of DMTA (Design-Make-Test-Analyze)

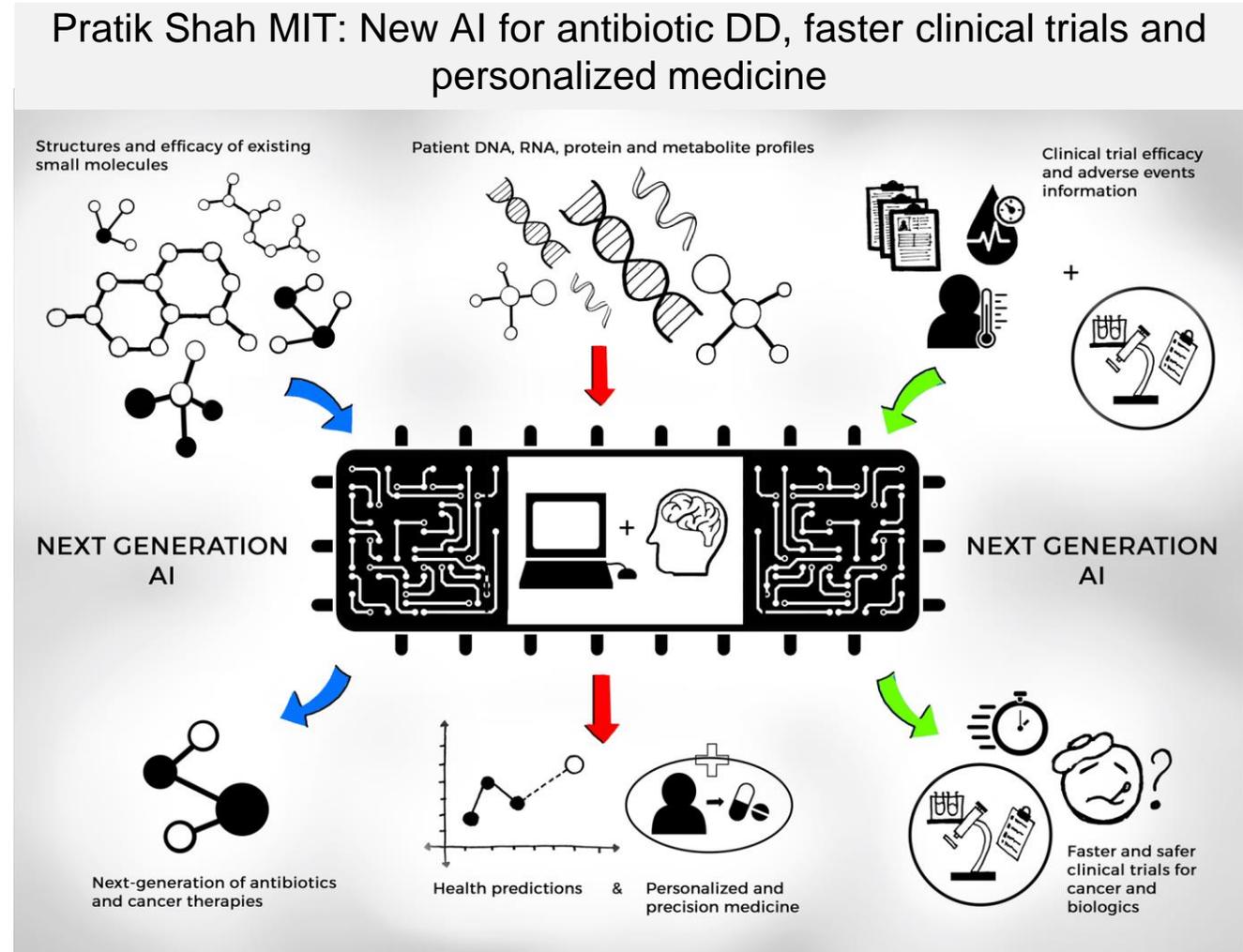
- Build of a digital laboratory with automated synthesis and analysis workflows working 24-7 by automatically providing building blocks and reagents to the synthesis platform
- Fully integrate and automate analytical workflows to purify, confirm structure and quantitate samples
- Automate a variety of biochemical, biophysical and compound property assays and integrate those with the chemistry
- Ultimately connect AI drug design component



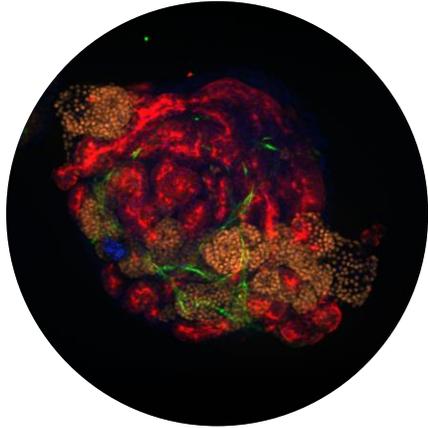
Artificial Intelligence and Automation

- Machine learning will have a big impact in all phases of drug discovery
- Driven by Big Data and progress in artificial neural networks

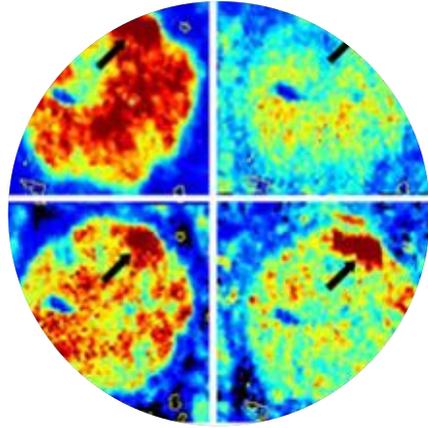
Artificial Intelligence Shakes up Drug Discovery
(Nogray The Scientist 2019)



Better predicting clinical success



Cellular and organoid models



Molecular imaging and AI



Quantitative pharmacology



Biomarker identification

A holistic view of our complex preclinical models that inform clinical decision making



Early Careers at AstraZeneca

Research and Development (R&D) Graduate program

- A two-year program, launched in 2013 with three different eight month placements across R&D with a focus on breadth of experience.
- In Europe the program is run at Gothenburg and Cambridge.
- An excellent opportunity to explore different areas of the drug discovery process, giving you responsibility on real projects.
- Enrollment in our Global Graduate Development Program with focus on the 'softer' skills development.
- Alignment to a mentor who is a full time member of the organization and will support you for the duration of the program.
- Competitive salary and benefits, generous relocation support.

Essential requirements

- Bachelors or Masters degree, with graduation in 2020 or due in 2021.
- Bright, motivated and highly driven individuals with a real passion for drug development.
- Innovative, strong critical thinking with enthusiasm and energy to match their scientific expertise.
- Ability to work as part of a collaborative team that focuses unequivocally on patient needs.

Research & Development: <https://careers.astrazeneca.com/r-and-d-graduate-programme>



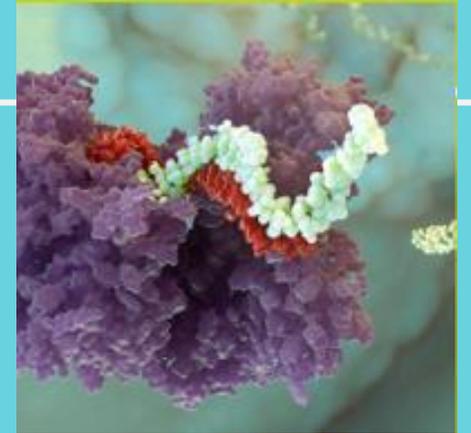
Growth of the Graduate Program

- Biometrics & Information Sciences: <https://careers.astrazeneca.com/biometrics-and-information-graduate-programme>
- BioPharmaceutical Development: <https://careers.astrazeneca.com/rap>
- Data Sciences and Artificial Intelligence: <https://careers.astrazeneca.com/data-sciences-and-ai-graduate-programme>
- Human Resources: <https://careers.astrazeneca.com/hr-graduate-programme>
- IT / Technology Leadership: <https://careers.astrazeneca.com/technology-leadership-programme>
- Operations and Supply Chain: <https://careers.astrazeneca.com/operations-global-graduate-associates-programme>
- Pharmaceutical Technology & Development: <https://careers.astrazeneca.com/pharmaceutical-technology-development-graduate-programme>



Application process

- 1 Apply online at careers.astrazeneca.com/students
- 2 Complete video interview/online games (if required)
- 3 Attend assessment centre
- 4 Receive offer of employment



Dedicated to being a Great Place to Work



87% of employees agree that their manager supports **diversity and inclusion**

45% of our senior roles are filled by women
Empowering **diversity** is embedded in everything we do

87% of employees have improved their skills, learned new skills, or had a **development opportunity** in the last 12 months

61% of our total electricity use is sourced or generated from **renewable sources**

65% of our sites offer programmes to address employee **wellbeing**

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