

**UOS reference number**

ST0759

**Trailblazer reference number**

TB0376

**Title of occupation**

Research Scientist L7

**Trailblazer name**

Life Science & Industrial Science (Research Scientist)

**Core and options**

No

**Resubmission**

No

**Level of occupation**

Level 7

**Route**

Health and Science

**Typical duration of apprenticeship**

30 months

**Target date for approval**

31 March 2019

**Occupational profile**

**Summary**

This occupation is found in a wide range of industries including Pharmaceutical, Clinical Trials, Personal Care, Analytical, Manufacturing, Water/Environmental, Energy, Agricultural, Food Science, FMCG, Petro-Chemical, Nuclear, Aerospace, Oil, Gas, Materials, Renewable, Bio medical, NHS, Diagnostics and MOD/Defense. The broad purpose of the occupation is someone who is primarily involved in planning, leading and conducting experiments and analysing results, either with a definite end use, for example to develop new products, processes or commercial applications, or to broaden scientific understanding in general. They provide scientific and technical leadership, giving a clear sense of purpose and driving strategic intent. They can expect to lead on business critical projects - managing the design and implementation of such projects both internally and externally, disseminating findings to internal and external stake-holders and making strategic recommendations based upon the findings of the project. They take into account new scientific methods and breakthroughs, identifying longer-term opportunities and risks. They will be able to effectively collaborate

with both industry and academia, working in multidisciplinary teams, to apply results of research and develop new techniques, products or practices. They are responsible for developing ethical, innovative research practices and programmes with the ability to deliver results. They are a role model, with responsibility for those in senior positions and significant organisational budgets. In their daily work, an employee in this occupation interacts with a wide range of individuals and teams. This is due to the varied work and leadership roles that the individual undertakes through their work. This means that these varied interactions require them to communicate across businesses and industries and lead on ensuring scientific information is communicated in efficient ways, examples of these varied interactions are;

Internal - Direct Reports/teams, Project Teams, Line Managers, Senior Managers, Company Boards, Global Heads of Departments, Teams in other International Regions, Manufacturing Sites, Legal Teams, Sales and Marketing teams, Data Management, Securities Teams, Quality Control and Design Teams

Externals - Compliance, Legislation (court/legal) , Regulatory Bodies, Professional Bodies, Universities and Educational Bodies, Customers, External Partners, NGOs, Contract Research Organisations, Sector forums, Patient groups, Media, Technical Specialists, Suppliers and Sector skills councils,

The working environment may also be varied and change from day to day due to the diverse nature of the projects and work that the individual may be working on, but can include;

Lab Based, Manufacturing Plants, Field based - External sites(out side), office based, home based, Customer sites, Conferences and education facilities. An employee in this occupation will be responsible for autonomously managing their own work programs and time while maintaining their own CPD and continuing to develop and update the knowledge and skills of others (coach develop/lead). They are responsible for direct line management of research teams or leading peer groups and collections of scientists in programs/experimentation's to achieve required goals. They report to senior level management/heads of functions while also being accountable for reporting to board members within the company, clients and research councils. They will be responsible for budgetary control of their projects and advising on wider company impacts of research around production costs and profitability of research results.

They will be responsible for managing different streams of work and leading on/designing and carrying out trails of process and procedures and Translation of science to action. Alongside also designing , developing, implementing and evaluating these business changes.

The volumes and breath of this may vary due to the size of the organisation. With smaller companies also requiring their research scientists to be responsible for acquiring business through communication with customers and leading in this area.

**Typical job titles**

Typical job titles include Research Scientist, Research specialist, Science Team leader, Senior Scientist, Technical/Scientific Specialist, Laboratory manager, Development scientist, Lead Scientist, Senior Science Manager, Senior Analytical Chemist, Senior Process Scientist, Senior Project Scientist, Programme Manager, Senior Laboratory Scientist, Senior Study Scientist.

Duty	Criteria for measuring performance	Knowledge	Skills	Behaviours
<p>Lead, ensure and be responsible for science based projects. Manage/support, plan, design the running of appropriate activities and make decisions for improvements and next steps.</p>	<p>Meet or exceed expectations of measurement against appropriate project benchmarks and specification, including regulation/legislation, finance, time scales, customer expectations and technical achievements.</p>	<ul style="list-style-type: none"> <li>• K1 -Subject specific knowledge: A deep and systemic understanding of a named / recognised scientific subject as found in an industrial setting, such as biology, chemistry or physics, found in the nuclear, food manufacture, pharmacology or energy production sectors, at a level that allows strategic and scientific decision making, while taking account of inter relationships with other relevant business areas / disciplines.</li> <li>• K2 - Management, leadership and effective communication: Organisation objectives and where their role contributes to the success achievement of these objectives. How to communicate effectively with a wide range of senior leaders across different departments, up and down the supply chain, within their own team.</li> </ul>	<ul style="list-style-type: none"> <li>• S1 -Scientific Knowledge: Apply a range of advanced, new and emerging practical and experimental skills appropriate to the role (e.g. chemical synthesis, bio analysis, computational modeling)</li> <li>• S3 - Commercial and Business Issues: Identify issues, including intellectual property and the commercial demands of the business environment. Understand the scientific objectives of work undertaken and its relevance to the organisation.</li> <li>• S5 -Project Management and Leadership:</li> </ul>	<ul style="list-style-type: none"> <li>• B2 -Flexibility and Adaptability: Responsiveness to change, adjusting to different conditions, technologies, situations and environments.</li> <li>• B3 -Integrity and Reliability: Respect for the confidentiality of individuals and company information. An intrinsic ethical stance to all aspects of day to day activities. Reputation of trust internally and externally.</li> <li>• B6 - Planning, Prioritisation and Organisation: Effective time management</li> <li>• B7 - Continuing Professional Development (CPD): Accountability of own and others development needs, undertaking CPD. Curiosity of science and proactively develops knowledge to ensure that scientific and business decisions are based on strong science.</li> </ul>

Duty	Criteria for measuring performance	Knowledge	Skills	Behaviours
		<p>Advanced mixed media communication, such as presentations, report writing (technical and non-technical) negotiation and influencing.</p> <p>Leadership within a team of multi discipline specialists at different levels across the organisation, ensuring a shared vision and commitment to success.</p> <p>Effective project management as used in their employer’s environment with regard to quality, cost and time.</p> <p>The employers organisational structure and where their own role fits</p> <ul style="list-style-type: none"> <li>• K3 - Ethics, regulation and registration:</li> </ul> <p>All current relevant national and international regulations needed to carry out the role. This will include scientific regulation, health and safety and laboratory safe practice, anti-bribery and anti-corruption</p>	<p>Generate effective project plans to include management of scope, schedules, budget and risk. Organise resources, budgets, tasks and people. Co-ordinate team activities to meet project requirements and quality processes. Adapt scientific strategy/delivery to be consistent with requirements. e.g. client, regulatory, ethical, geographic.</p> <ul style="list-style-type: none"> <li>• S6 - Critical Thinking: Conceptualise, evaluate and analyse information to solve problems</li> <li>• S7 - Research and dissemination: Frame research questions and methodology drawing from current sources e.g., literature and databases. They can produce intellectual insight and innovations in their own discipline to be shared with colleagues, peers and wider stakeholders internal and external to the business.</li> </ul>	

Duty	Criteria for measuring performance	Knowledge	Skills	Behaviours
		<p>Ethical scientific practice and the employers processes and procedures surrounding professional conduct</p> <p>How to identify, record, mitigate and manage risk. The impact of failure and how to manage risk on the business.</p> <p>The benefits of equality of diversity in the workplace.</p> <ul style="list-style-type: none"> <li>• K4- Research methodologies: Methodologies appropriate to the sector and how to formulate and apply a hypothesis.</li> </ul> <p>Appropriate application of scientific process.</p> <p>The unpredictability of research projects and the need to adapt and adjust daily planning needs to accommodate new developments.</p> <ul style="list-style-type: none"> <li>• K5- Data analysis and evaluation: Statistical analysis techniques, numerical modelling techniques and how they are applied in context.</li> </ul> <p>How to interpret and categorise data to make informed and objective decisions against the goals and targets of the project.</p> <p>How to evaluate and interpret the data and associated analysis against company objectives.</p>		

Duty	Criteria for measuring performance	Knowledge	Skills	Behaviours
lead experiments and ensuring that the appropriate processes are carried out.	The quality of the output, results, analysis and report.	<ul style="list-style-type: none"> <li>• K1</li> <li>• K3</li> <li>• K4</li> <li>• K5</li> </ul>	<ul style="list-style-type: none"> <li>• S1</li> <li>• S2 - Data Collection and Reporting: Capture and evaluate data critically drawing a logical conclusion, e.g. Case Report Forms, Data Management Plans, Data Review Plans, edit checks and User Acceptance Testing Plans.</li> <li>• S3</li> <li>• S4 - Communication Skills: Write extended reports and critique others' work across a range of documentation, e.g. protocols, consent forms and scientific reports. Deliver oral presentations and answer questions about their work and/or the work of their team. Utilise interpersonal skills, communication and assertiveness to persuade, motivate and influence. Discuss work constructively and objectively with colleagues customers and others; respond respectfully to and acknowledge the value of alternate views and hypothesis</li> <li>• S5</li> <li>• S6</li> <li>• S7</li> </ul>	<ul style="list-style-type: none"> <li>• B1 - Team Working: Collaboration, influence, and respect for others</li> <li>• B2</li> <li>• B3</li> <li>• B6</li> </ul>
Combine and compare data from diverse and complex sources (e.g. Literature, experimental data, external/internal contributors) to draw conclusions within a wider context.	Provision of scientifically sound conclusions advising the organisation on logical next steps.	<ul style="list-style-type: none"> <li>• K1</li> <li>• K4</li> <li>• K5</li> <li>• K6 - Data management: How to safely store and handle data in line with national and international data protection and cyber security regulations that apply to the role. How to manage and store data in line with employer processes and security approach. How to create an appropriate data management plan.</li> </ul>	<ul style="list-style-type: none"> <li>• S1</li> <li>• S2</li> <li>• S6</li> </ul>	<ul style="list-style-type: none"> <li>• B3</li> <li>• B6</li> </ul>

Duty	Criteria for measuring performance	Knowledge	Skills	Behaviours
develop new and existing products, services and methods for organisational needs (e.g. development of a new active ingredient or measurement methodology using new equipment).	Provision of scientifically sound recommendations advising the organisation on logical next steps.	<ul style="list-style-type: none"> <li>• K1</li> <li>• K3</li> <li>• K4</li> <li>• K5</li> <li>• K6</li> <li>• K7 - Entrepreneurial and enterprise: How to consider a multi solution approach to the objective in the key stages of a project. Market analysis awareness (SWOT / PESTLE / feasibility studies) and how to assess the impact of the project on the business Intellectual property rights as they apply to the role and specific projects. Value for money and the ability to use market analysis to make go / no go decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• S1</li> <li>• S2</li> <li>• S5</li> <li>• S6</li> </ul>	<ul style="list-style-type: none"> <li>• B1</li> <li>• B2</li> <li>• B3</li> <li>• B4- Management of Expectations Of senior management, study sponsors, vendors, investigational sites and key opinion leaders.</li> <li>• B5- Accountability: For self and others to ensure that actions are in the best interest of affected parties.</li> <li>• B6</li> </ul>
lead on the development of, and drive strategic plans within a scientific context and input to/suggest wider organisational strategy linked to their role.	Meet the key performance requirements linked to their role and wider department	<ul style="list-style-type: none"> <li>• K1</li> <li>• K2</li> <li>• K3</li> <li>• K4</li> <li>• K5</li> <li>• K6</li> <li>• K7</li> </ul>	<ul style="list-style-type: none"> <li>• S1</li> <li>• S3</li> <li>• S4</li> <li>• S5</li> <li>• S6</li> </ul>	<ul style="list-style-type: none"> <li>• B1</li> <li>• B2</li> <li>• B3</li> <li>• B4</li> <li>• B5</li> <li>• B6</li> <li>• B7</li> </ul>

Duty	Criteria for measuring performance	Knowledge	Skills	Behaviours
effectively lead and manage communications (e.g. complex scientific information and organisational goals) with key stakeholders and other interested parties at all levels including specialist and non-specialist audiences, both internal and external to the organisation.	The information is communicated accurately, clearly and succinctly,	<ul style="list-style-type: none"> <li>• K1</li> <li>• K2</li> <li>• K8 - Development of self and others:</li> </ul> <p>The importance of continuing professional development and how to maintain their own specialist knowledge in an ever evolving environment</p> <p>How to effectively coach and mentor colleagues, peers or team members to address identified skills gaps, using appropriate methods.</p> <p>How to upskill non-technical colleagues to enable them to complete their own role as needed.</p>	<ul style="list-style-type: none"> <li>• S1</li> <li>• S3</li> <li>• S4</li> <li>• S7</li> </ul>	<ul style="list-style-type: none"> <li>• B1</li> <li>• B2</li> <li>• B3</li> <li>• B4</li> <li>• B5</li> <li>• B6</li> <li>• B7</li> </ul>
advise on the development, critique and implement policies and protocols relating to health, safety, security and ethics.	Demonstration of continued improvement and adherence to policies, procedures and protocols.	<ul style="list-style-type: none"> <li>• K2</li> <li>• K3</li> <li>• K5</li> </ul>	<ul style="list-style-type: none"> <li>• S2</li> <li>• S3</li> <li>• S4</li> <li>• S6</li> </ul>	<ul style="list-style-type: none"> <li>• B1</li> <li>• B2</li> <li>• B3</li> <li>• B4</li> <li>• B5</li> <li>• B6</li> <li>• B7</li> </ul>
achieve goals in accordance with budget and finance targets and take account for financial implications within a wider commercial and organisational context.	Achieving goals to agreed budget, maximising organisation efficiency and enhancing ROI	<ul style="list-style-type: none"> <li>• K2</li> <li>• K3</li> <li>• K5</li> <li>• K6</li> <li>• K7</li> </ul>	<ul style="list-style-type: none"> <li>• S2</li> <li>• S3</li> <li>• S4</li> <li>• S5</li> </ul>	<ul style="list-style-type: none"> <li>• B1</li> <li>• B2</li> <li>• B3</li> <li>• B4</li> <li>• B5</li> <li>• B6</li> <li>• B7</li> </ul>
make decisions based on an understanding of the organisational and the wider business market (e.g. legal, technical, environmental, political and economic).	Demonstration of business, process, product or policy improvements with positive impact to the wider business goals.	<ul style="list-style-type: none"> <li>• K1</li> <li>• K2</li> <li>• K3</li> </ul>	<ul style="list-style-type: none"> <li>• S3</li> <li>• S5</li> <li>• S6</li> <li>• S7</li> </ul>	<ul style="list-style-type: none"> <li>• B4</li> <li>• B5</li> </ul>

Duty	Criteria for measuring performance	Knowledge	Skills	Behaviours
Carry out all data handling, processing and analysis, ensuring integrity with consideration of commercial practices and guidance including documentation, reproducibility regulated process and IP.	Maintain up to date knowledge of internal and external policies regarding data.	<ul style="list-style-type: none"> <li>• K3</li> <li>• K5</li> <li>• K6</li> <li>• K7</li> </ul>	<ul style="list-style-type: none"> <li>• S1</li> <li>• S2</li> <li>• S6</li> <li>• S7</li> </ul>	<ul style="list-style-type: none"> <li>• B1</li> <li>• B5</li> </ul>
provide leadership and specialist support and organise others in the work place to ensure projects meets the requirements of the organisational goals.	Leadership is demonstrated to a high standard through high performing teams and collaborations	<ul style="list-style-type: none"> <li>• K1</li> <li>• K2</li> <li>• K5</li> </ul>	<ul style="list-style-type: none"> <li>• S4</li> <li>• S5</li> </ul>	<ul style="list-style-type: none"> <li>• B1</li> <li>• B3</li> <li>• B6</li> </ul>
Develop others through demonstration of best practice within the organisation by effective coaching, mentoring, teaching and training.	Development of competent and high performing teams through reviews.	<ul style="list-style-type: none"> <li>• K1</li> <li>• K8</li> </ul>	<ul style="list-style-type: none"> <li>• S4</li> <li>• S7</li> <li>• S8 - Developing others: Apply a range of coaching and mentoring techniques with colleague's peers and team members, selecting the correct method to suit the situation and the person being coached / mentored.</li> </ul>	<ul style="list-style-type: none"> <li>• B3</li> <li>• B5</li> <li>• B7</li> </ul>
Identify and implement change management initiatives to meet the demands of technical and organisational requirements.	successful and effective implementation of new process/procedures/policies etc.	<ul style="list-style-type: none"> <li>• K2</li> <li>• K3</li> <li>• K7</li> <li>• K8</li> </ul>	<ul style="list-style-type: none"> <li>• S3</li> <li>• S4</li> <li>• S5</li> <li>• S6</li> </ul>	<ul style="list-style-type: none"> <li>• B1</li> <li>• B2</li> <li>• B3</li> <li>• B4</li> <li>• B5</li> <li>• B6</li> <li>• B7</li> </ul>



Duty	Training requirement	Method of delivery	Provider type	OTJ days
Lead, ensure and be responsible for science based projects. Manage/support, plan, design the running of appropriate activities and make decisions for improvements and next steps.	The apprentice will competently plan, organise and manage a programme of independent work, including dealing with risk assessments and ethical issues (e.g. COSHH form, SPEC form for Ethics).	['Classroom based learning' 'Practical workshop' 'Online learning']	['University' 'Private training organisation']	25
lead experiments and ensuring that the appropriate processes are carried out.	The apprentice will carry out all the experimental work (e.g through first planning in lab book, supervisory meetings).	['project' 'Practical workshop' 'Online learning']	['University' 'Private training organisation']	10
Combine and compare data from diverse and complex sources (e.g. Literature, experimental data, external/internal contributors) to draw conclusions within a wider context.	The apprentice will gather in a logical manner, complex sets of data with sounds judgments and conclusions to be shared with the scientific sector (e.g. oral presentation; written report).	['Classroom based learning' 'project & tutorials']	['University' 'Private training organisation']	20
develop new and existing products, services and methods for organisational needs (e.g. development of a new active ingredient or measurement methodology using new equipment).	The content of lectures will cover GLP, GMP and ISO regulations, method validation and health and safety. The apprenticeship will acquire awareness of the analytical science sector and critically evaluate the regulatory environment within which industrial research is carried out (e.g. writing of an industrial partner analysis).	['Practical workshop' 'Classroom based learning' 'Online learning' 'Project']	['University' 'Private training organisation']	30
lead on the development of, and drive strategic plans within a scientific context and input to/suggest wider organisational strategy linked to their role.	The apprentice will independently acquire knowledge and develop new skills to a higher level (e.g. undertake a market research to plan a scientific research meeting).	['Online learning' 'Classroom based learning']	['University' 'Private training organisation']	3
effectively lead and manage communications (e.g. complex scientific information and organisational goals) with key stakeholders and other interested parties at all levels including specialist and non-specialist audiences, both internal and external to the organisation.	The apprentice will go through an interview at the start of the project with both academic and industrial supervisors and will convey the aims of the independent research project. Then, the apprentice will go through a 2nd interview to assess the progress made at mid-project. The apprentice will also focus on the different types of science communication and how complex information can be effectively communicated to different audiences (e.g. poster exercise).	['Classroom based learning' 'Tutorials']	['University' 'Private training organisation']	5
advise on the development, critique and implement policies and protocols relating to health, safety, security and ethics.	The apprentice will engage fully with personal responsibility and ethical behaviour within the work place. The apprentice will exercise their initiative and take decisions in complex and unpredictable situations (e.g. knowledge of the local regulations and self-reflection of practice). The apprentice will identify possible ethical or safety implications of their research and the appropriate strategy to comply with current guidelines (e.g. submission of a mock funding application).	['Practical workshop' 'Online learning' 'Tutorials']	['University' 'Private training organisation']	10
achieve goals in accordance with budget and finance targets and take account for financial implications within a wider commercial and organisational context.	Content delivered as part of the lecture series / workshops will cover the understanding of the business needs, patents and knowledge transfer.	['Classroom based learning' 'Online learning' 'Tutorials']	['University' 'Private training organisation']	5

## Example training specification (continued)

Duty	Training requirement	Method of delivery	Provider type	OTJ days
make decisions based on an understanding of the organisational and the wider business market (e.g. legal, technical, environmental, political and economic).	Through a series of lectures and workshops, the apprentice will understand the competitive environment in which the company operates and how new products and services are brought to market and how projects are prioritised to maximise return on investment.	['Practical workshop' 'Online learning' 'Tutorials']	['University' 'Private training organisation']	5
Carry out all data handling, processing and analysis, ensuring integrity with consideration of commercial practices and guidance including documentation, reproducibility regulated process and IP.	The apprentice will learn through lectures and problem based learning about application of specific analysis, capabilities and limitations of analytical instrumentation, statistical analysis tools and databases for identification. The apprentice will also learn the tools of the trade such as method development, calibration, validation errors and standardisation. The apprentice will also learn about idea generation and idea management, filing and reading a patent through workshops.	['Practical workshop' 'Classroom based learning' 'Project']	['University' 'Private training organisation']	22
provide leadership and specialist support and organise others in the work place to ensure projects meets the requirements of the organisational goals.	The apprentice will complete a week-by-week portfolio demonstrating the progress in the development of both their personal and professional skills. The apprentice will evaluate their personal skill set and identify any skills deficit based on the Vitae Researcher Development Framework. The apprentice will attend a 2-day event on promoting leadership skills.	['Classroom based learning' 'Practical workshop' 'Project']	['University' 'Private training organisation']	5
Develop others through demonstration of best practice within the organisation by effective coaching, mentoring, teaching and training.	The apprentice will complete a week-by-week portfolio demonstrating the progress in the development of both their personal and professional skills. The apprentice will evaluate their personal skill set and identify any skills deficit based on the Vitae Researcher Development Framework. The apprentice will attend a 2-day event on promoting mentoring skills.	['Classroom based learning' 'tutorials 'projects']	['University' 'Private training organisation']	15
Identify and implement change management initiatives to meet the demands of technical and organisational requirements.	The apprentice will understand the basic business principles and reporting structures that affect the way research is carried out in industry (through workshops) and will communicate the commercial and technical information to a professional standard (through various dissemination strategies)	['Classroom based learning' 'Practical workshop']	['University' 'Private training organisation']	14

### Entry requirements

No entry requirements specified

### Professional recognition

Professional body	Level
Royal Society of Biology	Chartered Biologist
Royal Society of Chemistry	Chartered Chemist
Institute of Physics	Chartered Physicist

### Trailblazer membership details

#### Chair

Robert Watts (Covance)

#### Facilitator

Phil Bather (Cogent)

#### Employer members

Name	Employer
Andy Iudzik	Astra Zenica
Christelle Billon	Unilver
Daniel Gibson	GSK
Janette Graham	2 Sisters Food Group
Melissa Hanna-Brown	Pfizer
Paul Holt	Photo Centric
Philippa Hobby	Food & Environment Research Agency
Steve Laughher	Croda
Uday Ketipearchchi	Tata Steel

#### Other members

Name	Employer
Paul Trimmer	Royal Society of Biology
Richard Holliday	Royal Society of Chemistry