

# CAREERS THROUGH MATHS: RESEARCH SCIENTIST



Research Scientists use mathematics to solve complex problems and drive innovation. (Image Source: Unsplash)

## JOB OVERVIEW

Research Scientists conduct systematic investigation to discover new knowledge and develop innovative solutions across various fields, including academia, pharmaceuticals, technology, and government. They design experiments, analyse complex datasets, and build predictive models to test hypotheses and advance scientific understanding. Their work is fundamentally mathematical, relying on statistical analysis, computational modelling, and algorithmic thinking to derive meaningful conclusions from data.

Typically employed by universities, research institutions (like the Francis Crick Institute), pharmaceutical companies (GSK, AstraZeneca), and tech firms, their key responsibilities include securing funding, publishing findings in peer-reviewed journals, and collaborating with interdisciplinary teams. The role demands rigorous analytical thinking and a deep understanding of mathematical principles to ensure research integrity and validity.

## KEY MATHS APPLICATIONS

**Primary Areas:**

## ESSENTIAL SKILLS & TOOLS

SKILL	APPLICATION
<b>**Python/R**</b>	For statistical analysis, data visualisation, and implementing machine learning algorithms.
<b>**Experimental Design**</b>	To structure robust studies that minimise bias and allow for valid statistical conclusions.
<b>**Machine Learning**</b>	Developing predictive models from large datasets to identify patterns and make forecasts.
<b>**SQL/Database Management**</b>	Querying and managing large, complex research datasets efficiently.

## TYPICAL PATHWAY

A strong academic foundation is essential, typically beginning with a first or upper second-class honours degree in a mathematics-heavy discipline (e.g., Mathematics, Physics, Computer Science) from a UK university. This is almost always followed by a PhD in a specialised field from a Russell Group or other research-intensive institution. Postdoctoral research positions are common for gaining experience before progressing to a permanent senior scientist or principal investigator role.

## INDUSTRY DEMAND

Demand for Research Scientists in the UK remains strong, particularly in high-growth sectors like artificial intelligence, biotechnology, and renewable energy. The UK government’s commitment to increasing R&D investment to 2.4% of GDP by 2027 is fuelling job growth. Roles in data science and bioinformatics within the life sciences and tech sectors are experiencing particularly high demand.

## REAL-WORLD IMPACT

Research Scientists drive innovation that addresses global challenges, from developing new medicines and vaccines to creating sustainable technologies and advancing artificial intelligence. Their work forms the evidence base for public policy, leads to technological breakthroughs that boost economic competitiveness, and fundamentally expands human knowledge.

## QUICK FACTS

- **Growth:** Positive industry outlook
- **Career:** Professional role requiring analytical skills
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