

CMAC Research Data Engineer

Department	Strathclyde Institute of Pharmacy and Biomedical Sciences (www.strath.ac.uk/science/strathclydeinstituteofpharmacybiomedicalsciences/)		
Faculty	Faculty of Science (www.strath.ac.uk/science/)		
Staff Category	Research	**Reference No**	861655
Reports To	CMAC Associate Director for Centre Operations and Foundry Manager	**Grade**	8
Salary Range	£48337 - £52788 (limited due to funding)	**Contract Type**	Fixed Term (36 months, extension subject to further funding)
FTE	1 (35 hours/week)	**Closing Date**	18/11/2026
Working Arrangements	Fully On-site. Due to the nature of this role, it is based fully on-site.		
Work Location	Sir Jim MacDonald Technology and Innovation Centre (TIC), 99 George Street Glasgow, G1 1RD		

Job Advert

CMAC is a world-leading multidisciplinary medicines manufacturing research, innovation and translation centre at the University of Strathclyde. To deliver our digital chemistry, manufacturing and control (CMC) vision, we work with leading academic, industrial, technology and public sector partners and integrate experimental and digital capabilities that connect advanced processing, automation, data, modelling and decision support. CMAC is now expanding the engineering capability required to translate research outputs into reliable, interoperable and industrially relevant demonstrators, increase their technology readiness, and enable their deployment across the Centre's process development campaigns and CMC DataFactory™ platforms. As part of our vibrant portfolio, we are establishing the new **Glasgow Medicines Foundry**, funded with the support of Glasgow City Region and UKRI through the Local Innovation Partnership Fund (LIPF). This exciting new opportunity allows CMAC to accelerate our Translation to Industry (T2I) pillar and build on the pipeline of technologies developed across our research portfolio and mature their function and performance to establish demonstrators (TRL 6).

We invite applications for a Research Data Engineer to play a leading role in the development of the data and information infrastructure underpinning CMAC's digital medicines manufacturing vision and the Foundry demonstrators to achieve technology readiness level (TRL) 6. The successful candidate will design and develop data architectures, database schemas and scalable data pipelines that enable the collection, integration, management and exploitation of research and manufacturing data. Working as part of a team, they will develop semantic information models, ontologies and knowledge graph approaches that improve interoperability across digital and physical systems, supporting data-driven decision making and the deployment of advanced digital technologies. Working closely with the CMAC Digital Operations Team and other teams and colleagues as required, the postholder will help establish robust, secure and reusable digital capabilities that accelerate the translation of innovative manufacturing technologies from research into industrial practice.

Job Description

Brief Outline of Job:

The Research Data Engineer will design, build and run the data layer of the Foundry DataFactories. You will make experimental, process and equipment data from the TRL 6 Tableting DataFactory demonstrator available in a consistent, traceable and secure form, so that models, decision support tools and partners can use it. You will work to the architecture set by the Solutions Architect, alongside the software, control, automation and modelling engineers. You will lead on data platforms, support the semantic modelling and knowledge graph work, and act as deputy for machine learning, deployment and control. Like all CMAC posts, this role works in a matrixed environment, across Foundry, research, technical, operations, industry and external teams as required.

The post is funded for 36 months in the first instance, with extension dependent on co-investment secured during the programme.

Main Activities/Responsibilities:

1.	Lead the design, build and operation of the data platform for the Tableting DataFactory demonstrator, covering ingestion, storage, processing, access and archiving of experimental, process, instrument and metadata streams.
2.	Support the development of data models, metadata standards, ontologies and knowledge graph approaches that make data FAIR and interoperable, working with the CMAC semantic modelling lead and connecting them to the ontology based tools used across CMAC.
3.	Build and maintain reliable, tested pipelines from instruments, process equipment and control systems into the platform, working with the control engineer on acquisition and with the software engineer on services.
4.	Implement data quality checks, lineage, versioning and audit trails so that every result can be traced to its source and conditions.

5.	Provide well documented APIs and data products to the modelling team and to AI and decision support components, and support reproducible model training and deployment.
6.	Act as deputy for the machine learning, deployment and control workstreams, covering for colleagues and keeping the data layer aligned with model training, deployment and control requirements.
7.	Apply access control, encryption and data governance appropriate to commercially sensitive partner data, with the Solutions Architect and University IT security.
8.	Set up monitoring and alerting for pipelines and storage, and write tests and recovery procedures that make the data layer robust.
9.	Support partners and cluster forum members in sharing and using data, including onboarding of new data sources from external technologies.
10.	Disseminate results emerging from research in an effective and timely manner and submit publications to high quality peer reviewed journals and conference proceedings.
11.	Contribute to publications, technical reports and documentation, and to the transfer of data systems to T2I and OpenCMC.
12.	Provide regular reports on progress to the CMAC Associate Director for Centre Operations and Foundry Manager and other key staff or stakeholders. Take part in team meetings and give regular updates to the Foundry team, CMAC colleagues and stakeholders. Liaise and consult with the Foundry team, academics and industrialists to ensure alignment of research as well as the timely delivery of high-quality technical development with impact.
13.	Work in a matrixed environment, collaborating across Foundry, research, technical, operations, industry and external teams as required to deliver shared objectives.
14.	Undertake other duties commensurate with the grade of the post, as reasonably requested by the line manager.
15.	Engage in continuous professional development.

Person Specification

Educational and/or Professional Qualifications

(E=Essential, i.e. a candidate must meet all essential criteria to be considered for selection, D=Desirable)

E1	Degree in computer science, data science, engineering or a related discipline.
E2	PhD, or equivalent postgraduate or industrial experience at research fellow level.
D1	Membership of relevant Chartered/professional body.

Experience

E3	Experience of designing, developing and maintaining data pipelines and ETL/ELT workflows for scientific, engineering or manufacturing data.
E4	Experience of working with structured and unstructured scientific or manufacturing data.
E5	Experience of developing and maintaining data integration solutions across multiple systems and platforms, including data from instruments, sensors or control systems.
E6	Experience of relational database design, schema development and optimisation, including writing and maintaining complex SQL queries, stored procedures and views.
E7	Experience of designing data models to support scientific, engineering or manufacturing workflows.

E8	Experience of implementing data quality, validation and monitoring processes.
E9	Experience of semantic data modelling and ontology development, and of building and querying knowledge graphs to integrate laboratory, manufacturing and digital data and to improve interoperability between systems.
E10	Experience of supporting data lifecycle management, governance and metadata management, and of applying access control and security in sensitive data environments.

Job Related Skills and Achievements

E11	Strong programming skills in Python or a comparable language, with SQL and one or more modern data stack technologies.
E12	Working knowledge of RDF, OWL and SPARQL and of graph technologies such as triple stores or graph databases, in addition to relational databases and SQL.
E13	Working knowledge of data pipeline orchestration and cloud or on-premise deployment.
D2	Ability to write automated tests and documentation for data systems at TRL 6.
E14	Ability to work effectively in a matrixed environment, across Foundry, research, technical, operations, industry and external teams as required.
E15	Ability to work within multidisciplinary projects and ensuring the timely and effective delivery of project objectives and outputs

Personal Attributes

E16	Methodical, with a commitment to data quality and traceability.
E17	Excellent interpersonal and communication skills, with the ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences.

Other Relevant Factors

E18	Ability to balance work and time between conflicting demands.
E19	Able to present at meetings, events, conferences and seminars with authority and coherence.
D3	Experience of pharmaceutical, process or laboratory data, including PAT or process analytical data.
D4	Experience of implementing FAIR data principles within research or industrial environments.
D5	Experience with ISA-88, ISA-95, SiLA 2, OPC UA or related interoperability frameworks.
D6	Experience of supporting AI/ML or advanced analytics workflows, including multivariate data analysis and statistical modelling.
D7	Experience with time-series data from industrial or laboratory systems.
D8	Knowledge of GMP, ALCOA+ and data integrity principles.
D9	Experience of containerisation technologies such as Docker, of deploying and maintaining containerised applications, and of orchestration technologies such as Kubernetes.
E20	Ability to travel within the UK, and occasionally overseas, to meet partners and attend events.

Application Procedure

Applicants should visit Strathclyde's vacancies portal and complete an online application form including the name of three referees who will be contacted without further permission, unless you indicate you would prefer otherwise. Applicants should also submit a Curriculum Vitae and a covering letter detailing the knowledge, skills and experience you think make

you the right candidate for the job as well as a Research Plan outlining your research strategy for the next 5 years. Applicants should also complete the Equal Opportunities Monitoring Form.

The University of Strathclyde encourages the recruitment of disabled and neurodivergent candidates. If you require any reasonable adjustments or support at any stage of the recruitment or application process, please contact us at humanresources@strath.ac.uk, and we will be happy to assist you. This includes supporting you with the option to submit a paper application or a CV instead of completing the online application form.

Interviews

Formal interviews for this post will be held on Wednesday, 2 December 2026

The University is a Disability Confident Employer and operates a guaranteed interview scheme for disabled candidates who meet all the essential criteria for the post that they are applying for.

Other Information

Further information on the application process and working at Strathclyde can be found on our website (http://www.strath.ac.uk/hr/workforus).

Informal enquiries about the post can be directed to Dr Murray Robertson, CMAC Associate Director (murray.robertson@strath.ac.uk).

Conditions of Employment

Conditions of employment relating to the Research staff category can be found at: Conditions of Employment.

Rewards and Benefits

Our comprehensive benefits package, including generous annual leave, family-friendly benefits, flexible work options, and a commitment to continuous learning, reflects our appreciation for the valuable contributions of our colleagues.

We understand that each staff member has unique priorities and lifestyles, so our diverse benefits ensure there is something for everyone, details of which can be found on our Rewards and Benefits webpage.

- **Financial Rewards:** We provide attractive financial packages, including competitive salaries, relocation support for employees and a generous pension scheme, with university contributions of 14.5%.
- **Work-Life Balance:** We are dedicated to enhancing healthy work-life balance for our employees. We offer generous annual leave, an additional annual leave purchase option, flexible and agile work arrangements.
    - Annual Leave: Generous entitlement of 31 days, in addition to 11 public holidays and University closure days.
    - Additional annual leave purchase: Option to request purchase of 2 weeks' additional annual leave per year.
    - Flexible and agile working: The University provides flexible work arrangements. You can request arrangements that fit you and your role, such as hybrid, part-time, compressed hours, term-time, adjusted shifts, staggered hours. These requests can be made from the first day of your employment.
- **Family Friendly Benefits:** We offer a variety of enhanced family-friendly benefits to support our employees in balancing work and family responsibilities. These include Maternity Leave, Paternity/Maternity Support, Adoption Leave, Shared Parental Leave, Parental Leave, Carers Leave and support, Family Friendly Research & Scholarship Leave, and access to our on-campus nursery.
- **Career Development:** Our commitment to personal development is reflected in initiatives such as professional courses, subsidised educational programs, coaching and mentoring, leadership development, secondment opportunities, and access to our library.

- **Health & Wellbeing:** We place high importance on the safety, wellbeing, and health of all our staff and offer discounted Strathclyde Sport membership, an Employee Assistance Programme (EAP), Occupational Health Service, and Cycle to Work scheme.
- **Recognition Awards:** At Strathclyde, we place a strong emphasis on acknowledging and rewarding our staff's commitment and exceptional contributions. This is demonstrated through our Long-Service Awards and our Values-based Strathclyde Medals.

Pre-Placement Health Screening

If you are offered a job with us, you'll be encouraged to let us know about any disability, medical condition, or neurodivergence you have by completing a confidential pre-placement health questionnaire. Completing the questionnaire is entirely voluntary but by doing so we can put in place the right support and make any reasonable adjustments before you start.

Probation

Where applicable, the successful applicant will be required to serve a 9 month probationary period.

Pension

The successful applicant will be eligible to join Universities' Superannuation Scheme. Further information regarding this scheme is available from Payroll and Pensions.

Relocation

Where applicable, the University offers a relocation package to support new employees who meet the eligibility criteria. The relocation package is offered as a contribution towards costs incurred, and is designed to be flexible, allowing staff to use the financial support available in the way that will be most helpful to them. Further details are outlined in the Relocation Policy.

Equality and Diversity

The University of Strathclyde is a socially progressive institution that strives to ensure equality of opportunity and celebrates the diversity of its student and staff community. Strathclyde is people-oriented and collaborative, offering a supportive and flexible working culture with a deep commitment to our equality, diversity and inclusion charters, initiatives, groups and networks.

We strongly encourage applications from Black, Asian and minority ethnicity, women, LGBT+, disabled candidates and candidates from lower socio-economic groups and care-experienced backgrounds.

The University currently holds an Athena Swan **Silver award**, recognising our commitment to support and transform gender equality within higher education and research.

University Values

The University's Values capture what we're all about: who we are, what we believe in and what we stand for. Our Values have been derived from how we act and how we expect to be treated as part of Strathclyde.

In delivering **our People Strategy**, we will contribute, act, and make decisions guided by these values.

- **People-oriented:** committed to our staff and students, providing opportunities, and investing in their development.
- **Bold:** confident and challenging in what we do, and supportive of embracing appropriate and managed risk in our decision-making.
- **Innovative:** focused on discovering and applying knowledge with impact and encouraging creative thinking and new ideas.
- **Collaborative:** working together, with our colleagues and external partners, with integrity and in an open, respectful way.
- **Ambitious:** for our institution, staff and students as well as supporting the ambitions of our partners.

