Hamilton Institute

Post Ref: 031801

Maynooth University
National University of Ireland Maynooth

Maynooth University
Ollscoil Mhá Nuad

Hamilton Institute & Department of Computer Science
1x Senior Post-Doctoral Researcher
1x Post-Doctoral Researcher
(Molecular/DNA Computing; Temporary 24-Month Contracts)

The Role

Maynooth University is committed to a strategy in which the primary University goals of excellent research and scholarship and outstanding education are interlinked and equally valued.

We are seeking applications for two positions as Postdoctoral Researcher and a Senior Postdoctoral Researcher, on the topics of DNA computing, DNA data storage and DNA nanostructures in the research group (https://dna.hamilton.ie/) of Professor Damien Woods at the Hamilton Institute, with a possible co-appointment in the Department of Computer Science

EU and Irish national funding is provided by the DISCO project funded by the EIC Pathfinder Challenge programme (https://disco-tech.eu/), and the Active tiles project funded by Science Foundation Ireland Frontiers of the Future Programme (SFI FFP).

The roles involve engineering DNA-based self-assembly systems, DNA/molecular computers and DNA data-storage systems in the wet-lab. Specifically, topics include:

(1) Designing and implementing DNA nanostructures for DNA computing and DNA storage, for the EIC DISCO project (DNA based Infrastructure for Storage and Computation).
(2) Control of nucleation for DNA tile-based self-assembly (SFI FFP project: Active DNA tiles for programmable nucleation of robust DNA).

Both topics involve designing DNA nanostructures, including DNA origami, DNA tile-based systems and DNA computers of any/every kind including new, imaginative, designs.

Ideal candidates will have familiarity with such systems. Candidates should demonstrate the ability to carefully design and execute wet-lab experiments. Another potential direction is on theory; mathematically and computationally analysing the computational power of molecular computers. The successful candidate(s) will develop their research skills, publish high-quality work, receive training and mentorship in grant funding applications, supervise students and advance their academic career. We

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HR EXCELLENCE IN RESEARCH

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seek creative individuals willing to take initiative on research directions in an exciting and foundational research topic and who wish to define the future of the field.

Furthermore, the ideal candidate for Post-doctoral or Senior Post-Doctoral Researcher should have a PhD (or equivalent research experience) and a background in experimental practice of DNA-based molecular computing, and/or in theoretical computer science. Candidates with a theoretical background and experience are welcome but should demonstrate a keen interest and/or understanding of chemical, biochemical, physical theory relevant for thinking about molecular processes such as self-assembly, molecular robotics and/or chemical reaction networks. Also, candidates with a background in bioengineering, synthetic biology, molecular self-assembly, physics, chemistry and other related fields will be considered, but should have an interest in applying ideas from algorithms and computer programming to the molecular setting. The ideal candidate should have a history of outstanding research publications commensurate with career stage, which will be used as criteria to assess suitability for Postdoctoral or Senior Postdoctoral roles. In addition, candidates applying for the **Senior Post-Doctoral Researcher** should have relevant post-PhD experience suited to the role, specifically at least two years of post-doctoral research experience of relevance to the project (typically academia, but research-focused industry experience too providing there is appropriate justification).

Principal Duties

Administrative and other duties:

Duties are in line with what is usually expected of a postdoc or senior postdoc, including:

- Publish and publicise your excellent science to the scientific community;
- Be an effective research group member, present your work and the work of others at weekly group meetings, engage in scientific discussions; collaborate;
- Take leadership opportunities commensurate with the role, when they present themselves (student supervision, involvement in writing grant, provide mentorship within the research group, etc.).

The ideal candidate will have:

Essential

- A PhD and/or equivalent research experience in experimental practice of DNA-based molecular computing, and/or theoretical computer science; candidates with other backgrounds are welcome but should articulate clearly how their PhD and prior research is of relevance to the job description;
- Relevant background may include: (a) experimental techniques as described above, (b) background in theory of models of computation, or (c) background in a topic commensurate with either of these (e.g. synthetic biology, molecular robotics, algorithms for predicting DNA/RNA, or other topics—but articulate suitability for the post);
- A history of research publications in reputable venues commensurate with career stage;
- For candidates leaning more towards experiments, an ability to take initiative in the lab, troubleshoot equipment, source new equipment, take leadership roles in the lab; or for candidates leaning more towards theory they should show evidence of strong theoretical background in defining models of computation, or proving theorems about same, or work on algorithms that is of relevance to the field (please cite specific related papers in the field);
- Demonstrated ability to clearly articulate, in the application, suitability to the job description.

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To be appointed at the grade of Senior Post Doctoral researcher, candidates will need at least two years post-doctoral relevant relative research experience, which may include basic research experience in either academia or industry.

Desirable

- New ideas on where molecular computing can go in the future; a desire to be part of the future of the field;
- Demonstrated aptitude for, and experience at, interdisciplinary research;
- Experience with techniques and ideas that complement /enhance active topics in our research group;
- Experience in lab automation, including development of code libraries for control of lab equipment and analysis of data from wet-lab experiments.
- Other features not listed above that candidates feel would be important to note for the position evaluated at the panels' discretion;

Faculty and Research Institutes

The Hamilton Institute is the university's pilar research institute that aims to bridge the gap between mathematics, computation and its applications. Founded in 2001 with support from Science Foundation Ireland, the Hamilton Institute has been internationally recognized for its work across communication networks, mathematical biology and fundamental mathematics.

The Institute's commitment to real applications work is reflected in its strong industry links, including partnerships with IBM, Medimmune, AstraZeneca and Unilever. Its commitment to research excellence is reflected in its research output as well as active links with leading international research groups (at MIT, Caltech, Imperial College London, the Walter and Eliza Hall Institute of Medical Research, Institute Curie, amongst others) and consistently high ratings in external quality reviews. The Institute has an active international visitor and workshop programme.

Major focuses of research activity at the institute currently include the computational sciences, DNA and molecular computing, DNA nanotechnology, machine learning, optimization, probability and statistics, and the mathematics of networks.

The University

Maynooth University is a very distinctive university, a collegial institution focused on science and engineering, humanities, and social sciences, and equally committed to research, teaching and community engagement. Located in Ireland's only university town, its distinctive features and character owe much to its unique history and heritage. It provides a high-quality educational experience to over 15,000 students on a campus with 18th century roots and 21st century dynamism.

The strategic trajectory and accomplishments of Maynooth University, in the 25 years since its establishment as an autonomous public university, are exceptional, and a source of great pride to the university community, staff, students and alumni. Maynooth University in 2024 ranked in the top 90 global Times Higher Education (THE) Young University rankings, placing 86th in the world. Maynooth University's growing global reputation is based on the originality, quality, importance and impact of its

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research and scholarship, commitment to teaching and learning, the quality of academic programmes, and its leadership in widening participation in higher education. The sources of success are the dedication of its staff and the energy and engagement of its students.

Maynooth University is a place of lively contrasts – a modern institution, dynamic, rapidly-growing, research-led and engaged, yet grounded in historic academic strengths and scholarly traditions. With over 15,000 students Maynooth offers a range of programmes at undergraduate, postgraduate and doctoral level in the humanities, science and engineering and social sciences, including business, law and education. The University also offers a range of international programmes and partnerships.

Maynooth's unique collegial culture fosters an interdisciplinary approach to research, which its world-class academics bring to bear in tackling some of the most fundamental challenges facing society today. The University's research institutes and centres consolidate and deliver this impact as vibrant communities of learning, discovery and creation. Research at Maynooth also is very much central to its teaching and the University prides itself on placing equal value on its research and teaching missions.

Maynooth University's Values

Our values define who we are, what we believe in and how we act as a community. They underpin our future success and guide our expectations of ourselves and each other. Our values apply to everyone in the University community:

- Integrity
- Collegiality
- Responsibility
- Freedom of expression
- Ambition

Maynooth University Strategic Plan 2023 – 2028

The University's Strategic Plan 2023 - 2028 builds on our rich academic history and strong foundations to set out an ambitious and forward-looking path for the future of our University. This roadmap underscores our commitment to adapt to a changing world while staying true to our values.
Our vision is to be a university of excellence, opportunity and impact, having a significant stake in all three.

For more information about Maynooth University's future direction, please visit: https://strategy.maynoothuniversity.ie/

Plean Straitéiseach Ollscoil Mhá Nuad 2023 - 2028

Tógann Plean Straitéiseach na hOllscoile 2023 - 2028 ar ár stair acadúil shaibhir agus ar ár mbunchlocha láidre chun conair uaillmhianach agus cheannródaíoch a leagadh amach do thodhchaí ár nOllscoile. Soiléiríonn an treochlár seo ár dtiomantas do dhul i dtaithí ar dhomhan atá ag síorathrú agus ár ngníomhaíochtaí a chur in oiriúint dó, agus san am céanna a bheith dílis dár luachanna Ollscoile. Is í an fhís atá againn a bheith mar ollscoil feabhais, deiseanna agus tionchair, agus lámh láidir a bheith againn i ngach ceann de na trí ghné seo.

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Léigh anseo le haghaidh breis eolais faoi thodhchaí Ollscoil Mhá Nuad: https://strategy.maynoothuniversity.ie/?lang=ga

Selection and Appointment

- Only shortlisted candidates will be invited to attend for interview;
- Candidates invited for interview will be required to make a brief presentation;
- Appointments will be approved by the President based on the report of the selection board;
- It is anticipated that interviews will be held during the month of December;
- The appointment is expected to be effective from as soon as possible thereafter.

Equality and Diversity

Maynooth University actively works to ensure equality, celebrate the diversity of our community, and promote inclusion. To learn more about our commitment to Equality and Diversity, please read the Maynooth University Equality and Diversity Policy / Polasaí Comhionannais agus Éagsúlachta, our policy on the Employment of People with Disabilities, and our Gender Equality Action Plan 2023-2026. We aim to reflect the diversity of the community we serve and welcome applications from all individuals across our society.

Terms and Conditions

Tenure	These are full-time, temporary posts for a specified purpose, anticipated to be 2 years duration. The DISCO Project end date is anticipated to be 30/09/2028.
Location	The place of work is the campus of Maynooth University, Maynooth, Co. Kildare.
Salary	**1x Senior Post-Doctoral Researcher salary:** Senior Post-Doctoral Researcher (2024)*: €52,716 – €57,332 p.a. (4 points) Post-Doctoral Researcher (2024): €44,847 – €51,313 p.a. (6 points) **1x Post-Doctoral Researcher salary:** Post-Doctoral Researcher (2024): €44,847 – €51,313 (6 points) Appointments will be made in accordance with public sector pay provisions.
Hours of work	A 37-hour working week is in operation in respect of full-time positions (pro-rated for part-time positions). This can be reviewed or adjusted from time to time through national agreements.

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Annual Leave	Annual leave and public holidays are provided for in the University policy: https://www.maynoothuniversity.ie/human-resources/policies/annual-leave-policy Annual leave will be allocated on a pro-rata basis for part-time and temporary positions.
University policies and schemes	Employees of the University will be subject to the terms of the University policies and schemes, available on the University website at: https://www.maynoothuniversity.ie/university-policies https://www.maynoothuniversity.ie/human-resources/policies
Pension	This is a pensionable post. Employees of the University will enter into a public sector pension scheme, and as such, applicants must ensure they are eligible to become a member of a public sector pension scheme for the duration of the appointment. Details of the public sector pension schemes are available at: https://www.maynoothuniversity.ie/human-resources/pension-information
Eligibility	Applicants should note that eligibility is determined by the Department of Enterprise, Trade and Employment. Further information regarding eligibility is available at: https://enterprise.gov.ie/en/what-we-do/workplace-and-skills/employment-permits/employment-permit-eligibility/ Non-EEA applicants are responsible for ensuring they can secure a visa to travel to Ireland. Any offer of employment is conditional on applicants securing the appropriate employment permissions. **Former Irish Public Service employees - Certain Restrictions on Eligibility** Eligibility of applicants formerly employed by an Irish Public Sector body, and who availed of an Irish Public Service Redundancy or Incentivised Retirement Scheme under the Schemes below, may be affected: • Collective Agreement: Redundancy Payments to Public Servants • Incentivised Scheme for Early Retirement (ISER) • Department of Health and Children Circular (7/2010) • Department of Environment, Community & Local Government (Circular Letter LG(P) 06/2013) Applicants should ensure that they are eligible to be re-engaged in the Irish Public Service under the terms of such Schemes. Applicants should address queries with their former Irish Public Sector employer.
Garda vetting	Garda vetting or clearance may be required by the University.
Medical	The University may require a medical examination as a condition of employment.

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Data Protection Law

Applications to the University will be treated in accordance with the University Data Protection Policies. For information on the University's Data Protection Policies and Privacy Notice, please see our website: https://www.maynoothuniversity.ie/data-protection

Application Procedure

Closing Date:

23:30hrs (local Irish time) on **Sunday, 17th November 2024.**

Please note all applications must be made via our **Online Recruitment Portal** at the following link:

https://www.maynoothuniversity.ie/human-resources/vacancies

Applicants should submit a CV along with a cover letter. The cover letter should be a **research statement** of up to 4 pages articulating suitability for the position. Candidates are free to choose the content for their research statement as they please, keeping the job description and above criteria in mind; suggested topics include (a) research vision and plans, and (b) justification of why experience, interests and research plans make them an ideal candidate.

Applications must be submitted by the closing date and time specified above. Any applications which are still in progress at the closing time on the specified closing date will be cancelled automatically by the system.

Late applications will not be accepted.

Maynooth University is an equal opportunities employer

The position is subject to the Statutes of the University

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