



# Ollscoil Mhá Nuad Maynooth University

## Hamilton Institute Senior Research Fellow

(in DNA computing, DNA data storage and DNA nanostructures)  
(Specified Purpose Contract)

### 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.

Applications are invited for a Senior Research Fellow position in the fields of DNA computing, DNA data storage and DNA nanostructures. The position is based in the group of Professor Damien Woods at the Hamilton Institute, with possible co-appointment in the Department of Computer Science. Funding is provided by the EIC-funded DISCO project (*DNA Infrastructure for Storage and COmputation*) led by Prof Woods.

The role involves theory and engineering of DNA-based self-assembly systems and DNA/molecular computers systems in the wet-lab, including mathematical theory and analysis, developing software pipelines for experimental protocols, executing experiments, analysing data and publishing results in top-tier journals, as well as conferences in the field. In particular, **the role will focus on both modelling and experiments of (1) 1D and (2) 2D scaffolded DNA computers (SDC), as well as (3) the study of nucleation and growth in self-assembling DNA tile systems.** The successful candidate will **take a leadership role** in Prof Woods' research group, publish high-quality work, receive training and mentorship in grant funding applications, supervise students and advance their academic career. We seek candidates willing to **take the lead on new research directions** in exciting and foundational research topics, who wish to define the future of the field, and have a high level of expertise validated by leading roles in top-quality publications.

The post will run from 1<sup>st</sup> June 2026 to 30<sup>th</sup> September 2028 (inclusive).



## Principal Duties

- Take a leadership role in Prof Woods' research group. Specifically: carry out, and lead, theoretical and experimental work on the scientific topics of the group; concretely, take a lead on a Work Package (WP2) of the DISCO project which focuses on 1D SDC.
- Create new designs for DNA computing, data storage and self-assembly systems; analyse; determine experimental feasibility; test in the lab; publish outcomes in top academic journals/conferences.
- Carry out work on the control of DNA self-assembly nucleation and growth, including design of and analysis of novel ideas to control self-assembly at the molecular-scale: controlling kinetics/order of events in self-assembly, seeding, control (lower) nucleation rates while allowing for growth, or exert other novel forms of control on self-assembly that help us understand the ultimate physical limits on these processes.
- Take leadership and initiative with team members (postdocs, PhD students, etc.): Interpreting experimental data, debugging, fixing problems with designs by group members; helping make their ideas a reality, mainly **nurture an exciting creative space where motivated individuals can scientifically flourish**.
- Implement models of computation in the wet-lab;
- Take the lead on writing up scientific publications, as well as reports for funded projects (specifically for DISCO project WP2, and perhaps parts of WP3);
- Give high-quality scientific presentations at international conferences and workshops;
- Give high-quality scientific presentations at the regular weekly team meetings of Prof Woods;
- Carry out supervision roles, including supervision of undergraduate/Masters internship projects as well as potential co-supervision of PhD students
- Assist with running of the lab, including development of software for control of instruments, purchasing of equipment, consumables and supplies for wet-lab work, and other administrative roles.

## The ideal candidate will have:

### Essential:

- A PhD or equivalent, over 6 years' post-PhD experience in topics of relevance to the post, mainly: theory and experimental practice of DNA nanotech and DNA computing.
- Clear evidence of significant achievements: excellent publication record commensurate with career stage including publication experience at the very highest scientific level; other verifiable research outputs of note; leading contributions to scientific ideas; all on topics of relevance to the post.
- Experience at designing and implementing DNA-based computing and self-assembling systems in the wet-lab, as well as their theoretical design and

analysis using ideas from biophysics and chemistry; DNA self-assembly; crystal nucleation and growth, toehold mediated strand displacement.

- Technical/lab skills, in particular preparation of complex experiments involving hundreds or even thousands of DNA strands, atomic force microscopy (AFM), bulk fluorescence (on qPCR machines or plate-readers), or other methods of assaying DNA nanostructures/computations/self-assembly.
- Experience at developing software pipelines for DNA nanotech/computing, including for designing/running of experiments, managing equipment, controlling equipment, processing of experimental data, from AFM and bulk fluorescence assays.
- Feasible/implementable ideas on how to push forward the topics of DNA computing and/or DNA data storage and/or DNA nanostructures in new directions, consistent with goals of the DISCO project.
- Ability to take **initiative and leadership** on program management, supervision of students, debugging designs, leading the direction of experimental work in the lab;
- Excellent communication skills: including both presentation skills and scientific writing.

#### Desirable:

- Desire to bring in independent funding;
- Desire to lead the team in new directions in consultation with the PI; or seek funding and hire new personnel to do same;
- Experience/familiarity with running/administering advanced computer hardware and software for lab automation and system administration of lab equipment and computers. Development of relevant code pipelines for experimental projects beyond that listed above.

Please see <https://dna.hamilton.ie/> and <https://disco-tech.eu/> for more details about the research group.

#### Hamilton Institute

The Hamilton Institute is the university's pillar research institute bridging the gap between mathematics, computation and their 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 computing and DNA nanotechnology, natural language processing, machine learning, sustainable computing, 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 17,000 students on a campus with 18<sup>th</sup> century roots and 21<sup>st</sup> century dynamism.

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. We offer a range of programmes at undergraduate, postgraduate and doctoral level in the humanities, science and engineering and social sciences, including business, law and education, along with a range of international programmes and partnerships.

The strategic trajectory and accomplishments of Maynooth University, 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 ranked in the top 90 global Times Higher Education (THE) Young University rankings in 2024. Maynooth University's growing global reputation is based on the originality, quality, importance and impact of its 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'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 uailmhianach agus cheannródaíoch a leagadh amach do thodhchaí ár nOllscoile. Soiléiríonn an treo-chlár seo ár dtiomantas do dhul i dtaithe 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.

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

Our Strategic Plan sets out an ambition to be an excellent place to learn and work, and an inclusive community where students and staff can flourish and make a distinctive contribution to the national system of higher education and the public good. Achieving this requires staff to have a strong sense of connection to the University and support from colleagues. We recognise that our people are our greatest resource and actively seeks to attract, develop, and retain a talented workforce by creating a positive and welcoming University environment. As well as offering a competitive salary, access to a public sector pension scheme, and annual leave allowance, the University also provides other facilities and benefits including, but not limited to:

- Family-friendly leave schemes
- Tax Saver travel scheme and Cycle to Work scheme
- On-campus crèche
- On-campus restaurants and coffee shops
- Employee Assistance Programme
- Health and Well-Being programmes
- Education support opportunities
- Continuous Professional Development opportunities, including leadership programmes, mentoring, Aurora programme.
- Study and Exam leave

- Sports facilities and gym

To learn more about being part of the Maynooth University team, please visit our website at <https://www.maynoothuniversity.ie/human-resources/come-work-with-us>

## 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 April 2026;
- The appointment is expected to be effective from 1<sup>st</sup> June 2026 or 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

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| <b>Tenure</b>        | This a full time, temporary post for a specified purpose, anticipated to be 28 months duration.<br><br>Project end date is anticipated to be 30/09/2028 |
| <b>Location</b>      | The place of work is the campus of Maynooth University, Maynooth, Co. Kildare.  |
| <b>Salary</b>        | Senior Research Fellow (2026) €80,952 (1 point - with increment)<br><br>Appointments will be made in accordance with public sector pay provisions.      |
| <b>Hours of work</b> | A 37-hour working week is in operation in respect of full-time positions (pro-rated for part-time positions).   |

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|  | This can be reviewed or adjusted from time to time through national agreements.   |
| <b>Annual Leave</b>                    | <p>Annual leave and public holidays are provided for in the University policy: <a href="https://www.maynoothuniversity.ie/human-resources/policies/annual-leave-policy">https://www.maynoothuniversity.ie/human-resources/policies/annual-leave-policy</a></p> <p>Annual leave will be allocated on a pro-rata basis for part-time and temporary positions.</p>   |
| <b>University policies and schemes</b> | <p>Employees of the University will be subject to the terms of the University policies and schemes, available on the University website at:</p> <p><a href="https://www.maynoothuniversity.ie/university-policies">https://www.maynoothuniversity.ie/university-policies</a></p> <p><a href="https://www.maynoothuniversity.ie/human-resources/policies">https://www.maynoothuniversity.ie/human-resources/policies</a></p>   |
| <b>Pension</b>                         | <p>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: <a href="https://www.maynoothuniversity.ie/human-resources/pension-information">https://www.maynoothuniversity.ie/human-resources/pension-information</a></p>   |
| <b>Eligibility</b>                     | <p>Applications from non-EEA citizens are welcomed. Applicants should note that eligibility is determined by the Department of Enterprise, Trade and Employment. Further information regarding eligibility is available at: <a href="https://enterprise.gov.ie/en/what-we-do/workplace-and-skills/employment-permits/employment-permit-eligibility/">https://enterprise.gov.ie/en/what-we-do/workplace-and-skills/employment-permits/employment-permit-eligibility/</a></p> <p>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.</p> <p><b>Former Irish Public Service employees - Certain Restrictions on Eligibility</b></p> <p>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:</p> <ul style="list-style-type: none"> <li>• Collective Agreement: Redundancy Payments to Public Servants</li> </ul> |

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|                      | <ul style="list-style-type: none"> <li>• Incentivised Scheme for Early Retirement (ISER)</li> <li>• Department of Health and Children Circular (7/2010)</li> <li>• Department of Environment, Community &amp; Local Government (Circular Letter LG(P) 06/2013)</li> </ul> <p>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.</p> |
| <b>Garda vetting</b> | Garda vetting or clearance may be required by the University.  |
| <b>Medical</b>       | The University may require a medical examination as a condition of employment.   |

### 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, 8<sup>th</sup> March 2026**

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

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

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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