

**Inside this issue:**

- Our institutions at a glance: Trinity College Dublin (TCD) ... 1
- Students leaving the network ... 2
- Opportunities in the network ... 3
- News from the network ... 3

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## Our Research Institutions at a glance: TCD

**Trinity College** (*Irish: Coláiste na Tríonóide*), founded in 1592 by Queen Elizabeth I, is a research university and is one of the seven ancient universities of Britain and Ireland, as well as the oldest university in Ireland.

Located in a beautiful campus in the heart of Dublin, the college occupies 190,000 m (47 acres), with many of its buildings ranged around large squares and two playing fields. Trinity is the highest ranked university in Ireland and one of the world's top 100 (78<sup>th</sup> and 28<sup>th</sup> in Europe). It is home for 12,500 undergraduate and 4,500 postgraduate students across all the major disciplines in the arts and humanities, business and law, engineering, science, and health sciences.



**Figure 1.** Parliament Square at Trinity College Dublin with Chapel, Graduate Memorial Building, and Campanile.

The independent intellectual inquiry tradition of Trinity has produced some of the world's finest, most original minds including the writers Oscar Wilde and Samuel Beckett (Nobel laureate), the scientists William Rowan Hamilton and Ernest Walton (Nobel laureate), the political thinker Edmund Burke, and the former President of Ireland and UNHCR Mary Robinson. This tradition finds expression today in a

campus culture of scholarship, innovation, creativity, entrepreneurship and dedication to societal reform.

There are many sports clubs and student societies on campus. Foremost among them is arguably the University Philosophical Society, commonly known as The Phil. It is a student paper-reading and debating society. Founded in 1683, it is the oldest student, collegial and paper-reading society in the world. Throughout its long history it has welcomed many prominent guests, some of its more notable members include Ernest Walton, John Butler Yeats, Samuel Beckett, Bram Stoker and Oscar Wilde.



**Figure 2.** The Long Room of the Old Library.

The Library of Trinity College is the largest research library in Ireland. As a result of its historic standing, Trinity College Library Dublin is a legal deposit library for the United Kingdom of Great Britain and Northern Ireland, and has a similar standing in Irish law. The College is therefore legally entitled to a copy of every book published in Great Britain and Ireland and consequently receives over 100,000 new items every year. The Library contains about five million books, including 30,000 current

serials and significant collections of manuscripts, maps, and printed music, but does not store them on college grounds. Most of the library stores are in Santry in a place fondly known to students as “stacks.”

There are many superstitions and traditions on campus. For example, students never walk underneath the Campanile located at the front of the college, as it is believed that if you walk under the bell tower in Front Square and the bell tolls while you're under it that you will fail your exams.

## Students leaving the network



**Dr. Eva Luther, (NANOTHERICS):** Since October 2013 I have joined the Mag(net)icFun network as a postdoctoral fellow working for the industry partner NANOTHERICS. As NanoTherics Ltd. is a spin off company from Keele University and connections to

various research groups still exist, I had the opportunity to work closely together with research groups from Keele within and beyond the Mag(net)icFun network sharing equipment and expertise as well as collaborating on various research projects. The secondment plan envisioned by the network also gave me the opportunity to visit the laboratories of Prof. Jon Dobson in Florida, USA to broaden my expertise on Flow Cytometry.

My work at NanoTherics included the work on research projects as well as business related tasks such as laboratory-related documentation duties (e.g. Control of Substances Hazardous to Health, COSHH, Material Safety Data Sheets, MSDS, maintenance of the chemicals and cell bank lists, etc), market research or evaluation of customer data.

One of the main research interest of NanoTherics within the Mag(net)icFun network is the transfection of cells with the aid of magnetic nanoparticle-DNA plasmid complexes and oscillating magnetic fields. NanoTherics markets a device that allows the alteration of various parameters like frequency, displacement amplitude and oscillation time of a magnet plate underneath the cells growing in their normal culture plates in order to optimize the transfection process according to the individual cell types needs. The company also provides specialized nanoparticles that allow the maximization of transfection efficiency while the adverse effects on cell viability are minimized.

The main goal of my research for NanoTherics was the optimization of the transfection efficiency in cell types that are considered “hard-to-transfect” by adjusting those parameters.

During my research and in collaboration with the University of Keele and the ETH Zurich I compared

nanoparticles produced by members of the Mag(net)icFun network with those commercially available, investigated the effect of different shaped magnet plates that produce magnetic field strength of varying intensities on transfection efficiencies and compared the effects of different plasmid sizes on the transfection success.

At the time I was at the University of Florida I worked on another cell transfection related project that is still ongoing in Florida and received some hands-on training in flow cytometry allowing me to use the theoretical knowledge I gained during a workshop I participated one year before.

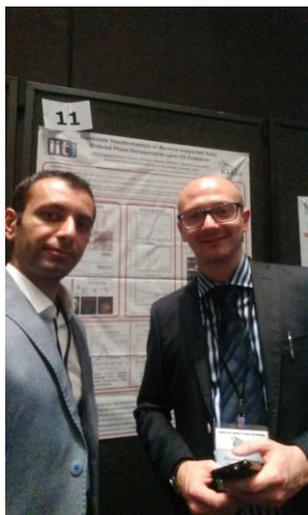
As Marie Skłodowska Curie Fellow I have also had the opportunity to attend several international conferences and training courses which helped to further develop my international network and build my scientific profile which will be essential for my future career as a scientist.

In 2014 I attended the ESOF Marie Skłodowska-Curie actions (MSCA) and the ESOF European Science Open Forum in Copenhagen, where general science was discussed from a layman's perspective. Also in 2014 I attended a Flow Cytometry Workshop in Berlin that provided me with essential background knowledge on a state-of-the-art technique.

In Summer 2015 I was accepted for the Nano Summer School and the Nanoscale Materials Characterization Weekend in Oxford, UK. The Summer School was focused on medical and pharmaceutical applications of nanoscale materials, thus I got an insight into the more applied field of nanoscience. Finally, in August 2015 I attended the 250<sup>th</sup> Meeting of the American Chemical Society in Boston, USA where I presented a theoretical poster on misunderstandings between Chemists and biologists in interdisciplinary networks. In addition to those “external” conferences and workshops I attended several local symposia and workshops at the University of Keele and the Mag(net)icFun meetings and workshops.

Being part of the Mag(net)icFun network gave me the opportunity to work at the interface of academia and industry and allowed me invaluable insights into both fields.

## Opportunities in the network



**Sharif Najafishirtari, IITG:** We attended at NAM24 from 14-19<sup>th</sup> of June to present our work “Nanoscale Transformations of Alumina-Supported AuCu Ordered Phase Nanoparticles upon CO Oxidation” as a poster. This conference was the 24th Meeting of the North American Catalysis Society, and it was held in Pittsburgh, PA, U.S.A. It is

known as a premier scientific event in the field of catalysis. The meeting focused on technological challenges, breakthrough discoveries and state-of-the-art industrial research in catalysis.

It was a great event in which we met many researchers, specifically working on catalysis. This provided a unique opportunity for us to see, discuss and learn new ideas and challenging concepts in catalyst development and characterization as well as theoretical understanding of catalytic phenomena.

## News from the network

- The next workshop of Mag(net)icFun has been held at the Trinity College, Dublin (Ireland) from March 3 to 4 2016.
- Fellows publications of the network: <http://www.magneticfun.eu/publication.php>

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