NUCLEIC ACID NEWS
A NEWSLETTER FROM THE NUCLEIC ACIDS GROUP OF THE RSC

@NucleicAcidUK

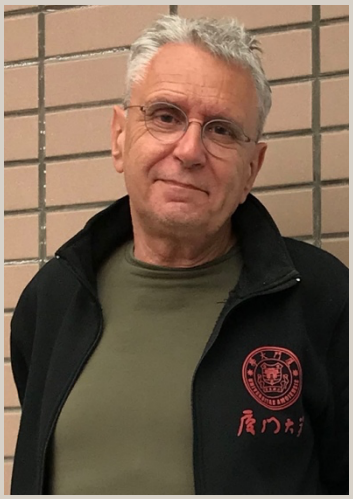
FALL 2023

LETTER FROM THE CHAIRMAN

It's great to have the opportunity to talk directly to the membership of the **Nucleic Acids group** after far too long. Like most of society group activities were severely curtailed during the pandemic, with no in-person meetings or conferences for what seemed like an eternity.

But at least we managed to keep the *Nucleic Acids Forum* going in one form or another. Starting that series is my proudest achievement as NAG Chair, and it brings our community together in a very special way. It provides an opportunity for everyone interested in all aspects of nucleic acids to come together in a fairly inexpensive meeting, providing an opportunity for our more junior members to present their work. The level of discussion is always excellent ! The fact that we maintained an unbroken chain of annual *Forum* meetings is due to the skill and hard work of **Marco Di Antonio** and our group secretary **Zöe Waller**, who took the Forum on-line for one, and then another year. Thanks to Marco and Zöe the on-line *Fora* were highly successful and enjoyable. But nevertheless it was wonderful to reassemble at Burlington House for an in person *Forum* last summer, and long may these continue.

In the wider arena, nucleic acids conferences have got going again internationally. *RNA Society* finally met in person in Boulder CO last summer, although significant numbers (me included !) acquired COVID19 there. And I just returned from chairing the *Fusion Nucleic Acids conference* in Cancun, Mexico after two postponements since 2021.



DAVID LILLEY
DUNDEE

The attendance at these meetings shows a real hunger for in-person conferences again. We have not held any large-scale conferences during the pandemic, but several are now well advanced in the planning scale. **Ben Luisi** is putting together the next *Cambridge Symposium*, that has a long and distinguished history in the oligonucleotides and nucleic acids field. This will take place in September 2024. We also hope to see the next *NACON conference* in Sheffield in the next couple of years. We are of course always receptive to ideas for conferences. If you have an idea for a meeting related to nucleic acids please contact me or other committee members. This can be a small one-day meeting or longer and larger symposia, and any aspect of the science from chemistry and physics through to biology and medicine. If it involves nucleic acids, we shall be interested !

I am delighted that the Newsletter has returned after a long break. Thanks to **Glenn Burley** for editing this previously, and to the indefatigable **Marco Di Antonio** for taking this on.

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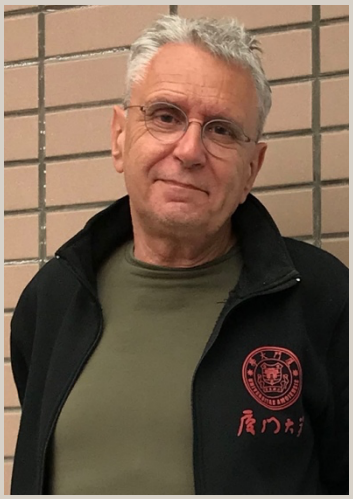
The Newsletter is our opportunity to communicate with our membership. And of course we welcome comments back in the other direction too.

So has anything positive emerged from the SARS-CoV-2 pandemic? In terms of nucleic acid science I think the answer is a clear yes ! I said at the outset that in the short term medicine would save lives, and of course this was true. But in the longer term I knew it would be science that got us out of it, and this very much proved to be true, and that included nucleic acid science. Now everyone has heard of mRNA ! For decades nucleic acids have held enormous promise in the field of therapeutics, with potential for exquisite specificity, yet the problem for so long resulted from difficulties with delivery. At least in terms of vaccines this now seems to have been solved. This holds tremendous promise for nucleic acid therapy more generally, and that is great news for the whole nucleic acid field. Just recently at the Nucleic Acids conference in Cancun I was reminded of the success of Spinraza in treating SMA by reprogramming mRNA splicing. Seeing videos of small children running around who would probably not have survived very long previously is so exciting, and will be a stimulus for everyone working on nucleic acid science. Of course these successes are a great tribute to the scientists directly involved, but nothing happens in a vacuum, and this is firmly based upon all the fundamental work in RNA science, splicing and so on.



DAVID LILLEY
DUNDEE

So nucleic acid science from chemistry through to molecular and cell biology will be enormously stimulated by these successes, and we look forward to the next decade. In that the Nucleic Acids group is here to assist you in whatever way we can.

Finally, I would like to take this opportunity to introduce the new members of the NAG committee: ***Yiliang Ding*** (John Innes Centre), ***Anastasia Callaghan*** (University of Portsmouth), ***Tim Craggs*** (University of Sheffield) and ***Marco Di Antonio*** (Imperial College London).

See you at the next Forum meeting in July 2024 !

David Lilley, Chair NAG

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18TH NUCLEIC ACIDS FORUM

LONDON, JULY 2022

The 19th Nucleic Acids Forum has been already held the 7th July earlier this year, we will cover the wide success of this event in the spring newsletter.

The RSC Nucleic Acids Group held the 18th annual nucleic acids forum at Burlington House. This meeting showcased emerging talent in the area of nucleic acids research across the chemistry-biology interface. This event has seen both PDRAs and PhD students giving talks and presenting posters across all the spectrum of nucleic acids research. The forum had a total of 10 talks and 23 posters presented during the day.

Furthermore, for the first time the Nucleic Acids Forum was run as a hybrid event, with more than 100 people attending remotely from all over Europe. We seek continuing to run this event as a hybrid meeting to increase the breadth and the diversity of the attendees.

The best talk prize was awarded to Adam Dorey for his presentation titled: "*Portable Sensing of Diagnostic Proteins Using Custom Designed DNA-Origami Nanopores*".

We also had two prizes for best posters award that went to Andrea Taladriz Sender from Strathclyde University for her poster on *Fluorous Nucleic Acids: A New Generation of Self-Assembled DNA structures*"

MARCO DI ANTONIO AND DAVID LILLEY PRESENTING ADAM DOREY WITH THE BEST TALK AWARD

and to Benjamin Mortishire-Smith form Cambridge University for his poster on "*A photoredox reaction for the selective detection of 5-carboxycytosine in DNA*".

All the prize winners received a copy of the "Nucleic Acids in Chemistry and Biology: Edition 4" and an amazon voucher.

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QUEENS COLLEGE CAMBRIDGE

CAMBRIDGE SYMPOSIUM ON NUCLEIC ACIDS CHEMISTRY AND BIOLOGY. SEPTEMBER, 2024

Ben Luisi is organizing the Cambridge Symposium on Nucleic Acids Chemistry and Biology in September 2024 (8^{th}-11^{th}). This will be the eighth in a long-established series of conferences aimed at bringing together researchers in the Nucleic Acids across a broad disciplinary range, with particular emphasis in Chemistry, Biochemistry and Structural Biology. The presentation of multi-disciplinary data and particularly at the interfaces of Chemistry, Biology, Nanotechnology and Medicine will be welcomed strongly. The symposium will provide a relaxed and informal atmosphere at Queens' College, where academics and industrial scientists will meet and present their latest studies in oral or poster form as well as striking up new collaborations.

A full list of speakers and a programme will be circulated in due course. Confirmed speakers include: Elena Conti, Jason Chin, Yamuna Krishnan, Alex Taylor, Kelly Nguyen, Jack Szostak, Chuan He, Adrian Krainer, Claudia Hoebartner, Thomas Carell, Luca Pellegrini, Marina Rodnina.

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PROF STEVE HALFORD

OBITUARY: PROFESSOR STEPHEN EDGAR HALFORD FRS (1945-2022)

Professor Stephen Halford, biochemist and pioneer in the field of DNA:Protein interactions, collaborator, colleague, mentor and friend to many within the Nucleic Acids community, died aged 76 on the 13th of July 2022.

Steve Halford (affectionately “Halfs” to friends) had an unusual start in life. Grandson of noted Egyptologist Colin Campbell Edgar, he was born in Cairo and spent most of his early childhood in Tripoli before returning with his parents to the home counties to attend Rugby school.

In 1964 Steve commenced undergraduate study in Bristol, the city that would become his home for most of his life, graduating with only the second ever Biochemistry cohort in 1967. Remaining in Bristol for his PhD studies with Freddie Gutfreund, Steve used emerging methods in transient kinetics to analyze substrate-induced conformational changes in alkaline phosphatase.

This was followed by postdoctoral work with Milton Schlesinger (St Louis), Mark Richmond and again Gutfreund, applying biophysical methods to study protein-ligand interactions.

Steve was appointed Lecturer in 1976 as part of an expansion of Bristol’s Biochemistry department. This period saw a shift in research focus during which Steve would become instrumental in establishing Bristol as a hub for studying interactions between proteins and nucleic acids. His own work focused particularly on restriction endonucleases and revealed unexpected diversity in their mechanisms of action. Steve also made clever use of these enzymes as model systems for exploring more general concepts including how proteins can efficiently locate and act at highly specific locations within chromosomes.

Steve was promoted to Professor in 1995, won the Novartis Medal of the Biochemical Society in 2001 and was elected a Fellow of the Royal Society in 2004. He was a formidable scientist, but his legacy will also include the many scientists that he supported and influenced. As Nucleic Acids Group Chair David Lilley commented “Steve was very much a scientist’s scientist” who took joy in the success of others and served the community altruistically. Indeed, Steve was a long-serving committee member of the RSC Nucleic Acids Group until shortly before retirement. Following a short period of illness, Steve died on the 13th of July 2022 at the Bristol Royal Infirmary, just a short walk from his former laboratory in the University. He will be remembered fondly by those who knew him.

Prof. Mark Dillingham, December 2022

FORTHCOMING CONFERENCES

DATES FOR YOUR DIARY

2024	
11th-14th February	Genome Regulation through RNA, Cancun (Mexico).
14th-18th February	6th DNA Repair/Replication Structures and Cancer, Cancun (Mexico).
February	Single Molecule Biophysics Conference, Paris (France).
5th July	Nucleic Acids Forum (Burlington House), London.
8th-11th September	Cambridge Nucleic Acids Symposium, Queen's College, Cambridge.
7th-10th October	4th Exploring DNA Repair Pathways as Targets for Cancer Therapy, St. Julians (Malta).

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Jason Chin, Laboratory of Molecular Biology
Mark Dillingham, University of Bristol
David Hodgson, University of Durham
Achillefs Kapanidis, University of Oxford
Ben Luisi, University of Cambridge
David Rueda, Imperial College London
Yiliang Ding, John Innes Centre
Anastasia Callaghan, University of Portsmouth
Marco Di Antonio, Imperial College London

ABOUT US

The Nucleic Acids Group is a subject group of the Royal Society of Chemistry and part of the Chemical Biology Forum. The group was formed in 2003, having previously been a special interest group (The Nucleic Acids and Molecular Biology Group) of both the RSC and the Biochemical Society.

The purpose of the group is to promote the subject of nucleic acids (including aspects of their chemistry, biochemistry, molecular biology and biophysics), primarily via organization of meetings covering topics within the subject.