

ANNUAL REPORT

2023

JULY 1, 2022 - JUNE 30, 2023



Letter from our Director

Dear Colleagues and Partners,

It is a pleasure to present this annual report on behalf of the Kavli Institute for Nanoscience Discovery. This annual report outlines our institute's vision, strategies, and accomplishments. In this our second year we are able to reflect on our advances, not just in research but also, in sustainability and our evolving culture.

At the heart of our strategy lies the aspiration to foster a collaborative, inclusive, and exemplary research environment. Our aim is to create a space where existing and prospective researchers can thrive, and in so doing, push the boundaries of scientific discovery. This commitment is not just a statement; it's woven into the very fabric of our institute.

In this report, you will find selected snippets of news stories, funding data, and interdisciplinary publications that illuminate our progress. More importantly, I hope you will also find evidence of our emerging culture and collective response to working to support each other.

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As we reflect on the past year, and look ahead to the challenges and opportunities that await, I want to express my deep appreciation for your partnership, sustained interest and continued support.

With warm regards,

A handwritten signature in black ink that reads "C. Robinson". The signature is stylized and fluid.

Professor Dame Carol V. Robinson
Director / Kavli INsD

A Year of Notable Milestones



First Kavli Fellow Appointed as Oxford Associate Professor

We are delighted to announce that our first Kavli Fellow, Lindsay Baker, who initially trained as a physicist, has been appointed as an Associate Professor in the Department of Biochemistry at the University of Oxford.



Kavli INsD Away Days

Kavli researchers gathered together for two rounds of Away Days, in September 2022 and March 2023. Events were designed to be highly participatory and collaborative. We are grateful for the funding from Research England and the Wellcome Institutional Strategic Support Fund.



Sustainability

Laboratory managers across eight Kavli-based labs secured Sustainability LEAF Awards (Laboratory Efficiency Assessment Framework) as part of [the vice Chancellors Sustainability Awards Scheme](#) in June 2023: 3 bronze, 4 silver, 1 gold award.



Professor Molly Stevens FRS FREng joins Kavli INsD as John Black Professor of Bionanoscience

Kavli INsD is excited to welcome Professor Molly Stevens as the John Black Professor of Bionanoscience. Professor Stevens joins us with her renowned interdisciplinary research group from Imperial College London, where she held prominent positions in Biomedical Materials, Regenerative Medicine, and more. Her pioneering work in biomaterials has earned her numerous international accolades, including the 2023 Novo Nordisk Prize. Professor Stevens will also become a member of the Department of Engineering Science and will play a vital role in our institute's leadership.

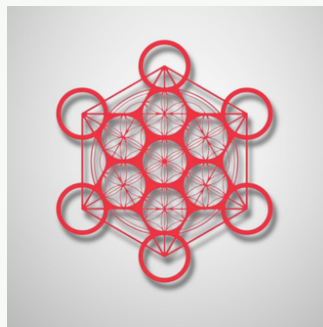
A Year of Notable Milestones



The Future of Interdisciplinary Science

Professor Robinson was interviewed by X-Net for her views on interdisciplinary research in the UK's Higher Education research landscape.

Kavli INsD is a contributing member of the X-Net research and training network, led by the University of Edinburgh in collaboration with members from the University of Dundee and Oxford. Funded by the Medical Research Council (MRC) the network is investigating barriers to interdisciplinary research, with the final policy recommendations to the UK Research and Innovation (UKRI) expected in March 2024.



Foundation Displaced Scientist/Student

Following a successful bid to the Kavli Foundation, we look forward to welcoming a displaced scholar to our institute next year.

7 Cultural Influencers

Seven Kavli host department researchers, nominated by Professor Robinson, were recognised under the University's Award and Recognition Scheme, supported by the Wellcome Institutional Strategic Support Fund. The seven were commended for their generous contributions to the emerging Kavli research culture over the past year.



3 Interdisciplinary DPhil Projects

Neel Sen supervised by Justin Benesch and Syma Khalid on "Combining computational modelling with biophysical techniques for characterising proteins"

Sacha Salphati supervised by Richard Wade-Martins and Simon Newstead on "Developing novel sybodies to modulate TRPML1 activity in models of Parkinson's disease."

Raman van Wee supervised by Richard Wade-Martins and Philipp Kukura on the "Wellcome Trust Chemistry in Cells (CiC) program - From biomolecular self-assembly to early disease detection with mass photometry."

A Year of Notable Milestones



Inaugural Kavli Award Lecture 2022

The inaugural Kavli Award Lecture for 2022 took place on 1 December 2022. Google DeepMind's CEO, Demis Hassabis, visited Kavli INsD to present his lecture and to receive his award. Kavli INsD Director Professor Carol Robinson introduced the speaker and described his outstanding career path. The event, which was also livestreamed via Zoom, continued with Demis Hassabis's lecture on "Using AI to Accelerate Scientific Discovery".



3-min Research Presentations

Kavli researchers continued with termly rounds of '3-min research presentations' reaching a total of 74 researchers participating across 11 events. Events were well attended and served as a platform for advancing nanoscience and fostering interdisciplinary research.

<https://kavli.web.ox.ac.uk/article/x>

Kavli Insights: Direct from Our Researchers

Becky Carlyle - DPAG: "There's a real 'can-do' attitude at the Kavli. From my group and the group next door, there has been three recent collaborations from completely different disciplines that have arisen from the phrase 'I don't know, but let's give it a shot'. It's a really motivating place, full of interesting ideas and novel approaches'. I'm currently working with Tarrick and Corinne (Chemistry/Robinson group) to try to enrich a calcium channel that we are interested in from psychiatry, to try to find protein level evidence"

Simon Newstead - Biochemistry: "Kavli provides the ideal cross cutting and interdisciplinary environment to target important biological questions quickly and efficiently."

Andrew Turberfield - Physics: "Excellent facilities and proximity to researchers from other disciplines which have already led to joint publications."

Selected Publications Across our Themes

Physics & Biology

A Modular RNA Delivery System Comprising Spherical Nucleic Acids Built on Endosome-escaping Polymeric Nanoparticles.

Garcia-Guerra A, Ellerington R, Gaitzsch J, Bath J, Kye M, Varela MA, Battaglia G, Wood MJA, Manzano R, Rinaldi C, Turberfield AJ.

<https://doi.org/10.1039/D2NA00846G>

Antimicrobial Resistance

Shapeshifting Bullvalene-linked Vancomycin Dimers as Effective Antibiotics Against Multidrug-resistant Gram-positive Bacteria

Ottonello A, Wyllie JA, Yahiaoui O, Sun S, Koelln RA, Homer JA, Johnson RM, Murray E, Williams P, Bolla JR, Robinson CV, Fallon T, Soares da Costa TP, Moses JE

<https://doi.org/10.1073/pnas.2208737120>

A Collaboration With the COVID-19 Moonshot

An in-solution Snapshot of SARS-COV-2 Main Protease Maturation Process and Inhibition

Noske GD, Song Y, Fernandes RS, Chalk R, Elmassoudi H, Koekemoer L, Owen CD, El-Baba TJ, Robinson CV, COVID Moonshot Consortium, Oliva G, Godoy AS

<https://doi.org/10.1038/s41467-023-37035-5>

3-Institute Collaboration on the Power of NMR

Posttranslational, Site-directed Photochemical Fluorine Editing of Protein Sidechains to Probe Residue Oxidation State via ¹⁹F-nuclear Magnetic Resonance

Isenegger PG, Josephson B, Gaunt B, Davy MJ, Gouverneur V, Baldwin AJ, Davis BG

<https://doi.org/10.1038/s41596-022-00800-9>

Many Kavli Authors Coming Together to Tackle an Important Problem

Neurons Derived from Individual Early Alzheimer's Disease Patients Reflect Their Clinical Vulnerability

Ng B, Rowland HA, Wei T, Arunasalam K, Hayes EM, Koychev I, Hedegaard A, Ribe EM, Chan D, Chessell T, Ffytche D, Gunn RN, Kocagoncu E, Lawson J, Malhotra PA, Ridha BH, Rowe JB, Thomas AJ, Zamboni G, Buckley NJ, Cader ZM, Lovestone S, Wade-Martins R

<https://doi.org/10.1093/braincomms/fcac267>

Kavli INsD in Numbers



340 STAFF &
STUDENTS



9 EARLY CAREER
FELLOWS (5 NEW)



36 FUNDING
BODIES

FOLLOW US ON SOCIAL MEDIA



@KavliOxford



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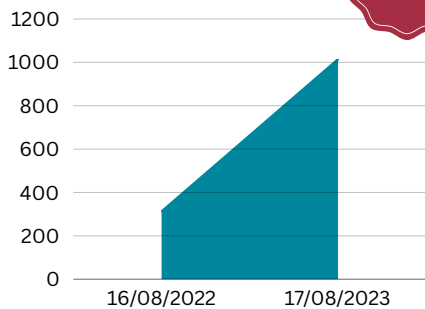
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Social Media Activity



LINKEDIN

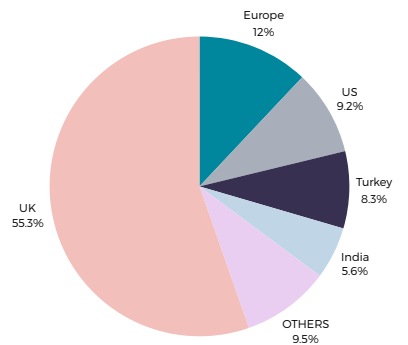


GROWTH



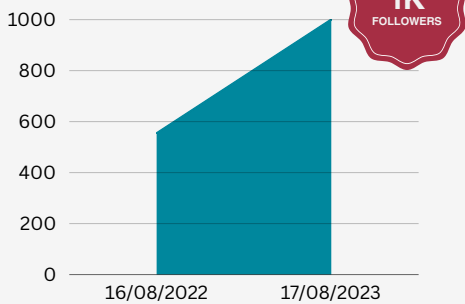
702 NEW FOLLOWERS IN 1 YEAR
30% 2022
70% 2023
225% INCREASE

LOCATION



TWITTER

GROWTH



446 NEW FOLLOWERS IN 1 YEAR



56% 2022 | 45% 2023 | **143% INCREASE**



YOUTUBE



31
VIDEOS



4,6K+
VIEWS

TOP FIVE LOCATIONS

