

Kristian Want, Ph.D.

Born in Norwich (England), studied in the UK, the Netherlands, France, USA.

kristianwant.com, kristian.want@icloud.com, +1 (857) 331-9480

Scientific Career & Education

2025-Present **Postdoctoral Associate, Biochemistry and Genetics**
Brandeis University, (Massachusetts USA)

Postdoctoral research projects: Mapping mitochondrial Fe-S pathways and protein complex interactions, exploring related diseases, and discovering new therapeutic avenues for treatment.

This research is being fulfilled across two laboratories specialising in biochemistry and genetics, respectively, providing a unique and exciting opportunity to evolve a skillset into genetic manipulation (using *C. elegans* as a tractable animal model) to identify and map pathways involved in Fe-S assembly, maturation, and transfer. This research leverages forward genetic screening to identify suppressors of mitochondrial dysfunction associated with Fe-S biogenesis and subsequently integrates an array of biochemical and computational tools to predict, verify, and map protein-protein interactions, ultimately leading to the use of virtual screening and rational protein design to discover small and complex molecules useful for therapeutic intervention.

2021-2024 **Ph.D., Biochemistry and Structural Biology (First-author Publication in Nature)**
Université Paris-Saclay, CEA, I2BC (France)

Ph.D. research project: Mechanism of [2Fe-2S] cluster synthesis by the eukaryotic ISC machinery.

Integrated biochemical and computational structural study on the biosynthesis of Fe-S clusters by the complete *H. sapiens* iron-sulfur cluster (ISC) machinery reconstituted *in vitro*. Discovered and characterized the auto-inhibitory role of FDX2 during [2Fe-2S] cluster synthesis, along with identifying the phenomena of suboptimal cluster synthesis arising through competition between FXN and FDX2 on the core ISC complex.

Initiated and led a virtual screening project to identify small-molecule drug candidates able to replace FXN in the treatment of Friedreich's ataxia. Selected candidates were assayed *in vitro* and funding was acquired to hire a postdoctoral researcher to pursue characterization of hits ([grant summary](#) - ongoing).

2016–2021 **Integrated Bachelor's and Master's Degree in Biochemistry (1st Class Degree Classification)**
The University of Leeds (United Kingdom)

Masters research project: Bridging *in silico* and *in vitro* study to map the interaction between a copper-containing LPMO and its electron-donating redox partner.

2018-2019 **Erasmus+ Programme, Molecular Life Sciences**
Radboud University (the Netherlands)

Spectroscopic Techniques, Molecular Structure, Advanced Mathematics.

2013–2015 **GCE Advanced Levels, Notre Dame Sixth Form (United Kingdom):** Chemistry, Mathematics, Physics

Awards

2026 **Brandeis Sprout Programme (\$30,000)** - Conceptualized and pitched a novel therapeutic strategy for the treatment of Friedreich's ataxia to a panel of external specialists and was subsequently selected to receive research funding and mentorship for product materialization.

2023 **Highest Rating FARA Flash Talk (\$100)** - Awarded as the highest rated *flash talk* during a series for the Friedreich's ataxia research alliance (FARA) charity community ([talk available online](#)).

2021 **Nominated for the Royal Society of Biology Top Master's Project Award** - Awarded by the University of Leeds for "submitting the best final year project in an accredited programme of study in the school of Molecular and Cellular Biology".

2021 **Molecular and Cellular Biology Master's Project Prize** - Awarded for achieving the highest research project grade among the Master's cohort.

2016-2021 **Dean's List Prize for Academic Excellence** - Achieved an accumulated 1st Class grade throughout each academic year while studying at the University of Leeds.

2015 **Top-Student Award for Excellence in Chemistry** - Awarded during A-Levels.

Presentations and Conferences

- Invited Speaker** **Cross-regulation of [2Fe-2S] cluster synthesis by ferredoxin-2 and frataxin**
FRISBI Seminar Series, 2026 (Online Series)
- Invited Speaker** **Leveraging FIDA to Monitor Competitive Binding During Fe-S Cluster Synthesis.**
Fida Biosystems UGM, 2025 (Paris, France)
- Invited Speaker** **Combining FIDA and ITC to Characterize Competitive Binding.**
Fida Biosystems UGM, 2024 (Copenhagen, Denmark)
- Speaker** **Efficient [2Fe-2S] Synthesis Requires a Balanced Ratio of Ferredoxin-2 and Frataxin.**
XI International Conference on Fe-S Proteins, 2024 (North Carolina, USA)
- Invited Speaker** **Searching for FXN-Replacing Molecules through Virtual Screening.**
FARA Flash Talk Series, 2023 (Online series) ([talk available online](#))
- Speaker** **Mechanisms of Frataxin and Ferredoxin-2 During Fe-S Cluster Formation.**
Institute for Integrative Biology of The Cell Seminar Series, 2023 (Paris, France)

Laboratory and Computational Skills

Protein Expression and Purification

Plasmid transformation
Cell growth and protein expression
Ni-affinity, size exclusion, ion exchange
Anaerobic manipulation

Protein Characterization

Circular Dichroism (CD)
Thermal Shift Assay (nanoDSF, SYPRO)
Dynamic Light Scattering (DLS)
Mass Spectrometry (MS)
Analytical Ultracentrifugation (AUC)

Analysis

GraphPad Prism
Anaconda (Python/Bash)
DataWarrior (Compound Libraries)

Computational Techniques

Virtual screening (AutoDock & BoltzMol-1)
AlphaFold, AlphaFill, & Boltz

Protein-protein docking (HADDOCK)

PPI mapping (PLIP & PyMOL)

Peptide design and modelling (PEP-FOLD)

Protein-Protein/Ligand Interactions

Isothermal Calorimetry (ITC)
Flow-Induced Dispersion Analysis (FIDA)
Biolayer Interferometry (BLI)
Chemical-crosslinking MS (XL-MS)

Protein Activity

UV-Visible kinetics
High-throughput assays (plate reader)
Alkylation assays (i.e. monitoring persulfidation state)

Genetics

C. elegans CRISPR/Cas9
DNA preparation for WGS
PCR, genotyping, mutagenesis of plasmids
Forward genetic screening (EMS mutagenesis)
Microscopy and measurements

Publications

- 2026** **Cross-regulation of [2Fe-2S] cluster synthesis by ferredoxin-2 and frataxin**
Kristian Want, (8 authors), Benoit D'Autreaux
Nature
- 2025** **The ISC machinery assembles [2Fe-2S] clusters by formation and fusion of [1Fe-1S] precursors**
Sylvain Gervason, Rafal Dutkiewicz, **Kristian Want**, (8 authors), Benoit D'Autreaux
Nature Chemical Biology
- 2024** **Mechanism of mitochondrial [2Fe-2S] cluster biosynthesis**
Kristian Want, Benoit D'Autreaux
Biochimica et Biophysica Acta (BBA) – Molecular Cell Research
- 2022** **Iron Insertion at the Assembly Site of the ISCU Scaffold Protein is a Conserved Process Initiating Fe-S Cluster Biosynthesis**
Batoul Srour, Sylvain Gervason, Maren Hellen Hoock, Beata Monfort, **Kristian Want**, (20 authors), Benoit D'Autreaux
Journal of the American Chemical Society
- 2022** **Recent Advances in the Elucidation of Frataxin Biochemical Function Open Novel Perspectives for the Treatment of Friedreich's Ataxia**
Beata Monfort, **Kristian Want**, Sylvain Gervason, Benoit D'Autreaux.
Frontiers in Neuroscience

Referees

Prof. Joshua Meisel (Postdoctoral Advisor)

Assistant Professor of Biology,
Department of Biology,
Brandeis University (USA)
meisel@brandeis.edu

Dr. Benoit D'Autreaux (Ph.D. Advisor)

HDR Supervisor,
I2BC, CEA,
University Paris-Saclay (France)
benoit.dautreaux@i2bc.paris-saclay.fr

Prof. Maria-Eirini Pandelia (Postdoctoral Advisor)

Associate Professor of Biochemistry,
Department of Biochemistry,
Brandeis University (USA)
mpandelia@brandeis.edu

Dr. Glyn Hemsworth (Master's Research Advisor)

Associate Professor of Structural Biology,
The Astbury Centre for Structural Molecular Biology,
University of Leeds (UK)
G.R.Hemsworth@leeds.ac.uk