



Profesorius Stivenas Edgaras Helfordas

Lietuvos mokslų akademijos užsienio narys, Bristolio universiteto (Jungtinė Karalystė) profesorius emeritas, Britanijos karališkosios akademijos narys Stivenas E. Helfordas gimė 1945 m. rugsėjo 22 d. (Kairas, Egiptas), mirė 2022 m. liepos 13 d. (Anglija).

1967 m. – baigė Bristolio universitetą;

1967–1970 m. – studijavo doktorantūroje Bristolio Universitete;

1970 m. – filosofijos mokslų daktaras (Bristolio universitetas) ;

1986 m. – mokslų daktaras (D.Sc.) ;

1995 – 2022 – profesorius Bristolio universitete.

Mokslinės veiklos kryptys:

Baltymų-DNR sąveika, enzimologija, fermentai, dalyvaujantys DNR metabolizme. Tirdamas nukleino rūgščių apykaitos fermentus prof. S.E. Helfordas ieško atsakymo į bendrus biologinius klausimus: 1) kaip veikia šie fermentai, 2) kaip jie suranda savo „taikinius“ ilgose DNR molekulėse. Iki šiol buvo manoma, kad šie fermentai ieško taikinio vienmatės difuzijos pagalba slinkdami DNR molekulės paviršiumi. Prof. S.E. Helfordo tyrimai parodė, kad taikinio paieškai nukleino rūgščių fermentai naudoja „molekulinių šuolių“ mechanizmą, ir pakeitė iki šiol vyravusią dogmą.

Apdovanojimai ir pripažinimas:

Prof. S. E. Helfordas buvo žurnalo “*Nucleic Acids Research*” redakcinės kolegijos narys. nuo 1995 m., jis buvo kviečiamas parašyti apžvalginius straipsnius prestižiniuose leidiniuose ir žurnaluose: *Annu. Rev. Biophys. Biomol. Struct.*, *Cold Spring Harbor Laboratory Press*, *Nature Struct. Biol.*, *Nucl. Acids Res.*, *Trends Biochem. Sci.*, skaitė kviestines paskaitas daugelyje tarptautinių konferencijų, 2008 m. buvo prestižinės FASEB konferencijos “Nucleic Acid Enzymes” pirmininkas. 2001 m. – Novartis medalis ir prizas – už indėlį į biochemijos mokslą; 2004 m. – Karališkosios akademijos narys; 2011 m. – Lietuvos mokslų akademijos užsienio narys.

Nuo 2001 m. prof. S. E. Helfordas bendradarbiavo su Lietuvos mokslo institucijomis. Jo veiklos dėka 2001–2008 m. inicijuoti du bendri Wellcome Trust fondo finansuojami moksliniai projektai, kurių bendra vertė ~ 1 mln. Lt. Šis bendradarbiavimas stimuliuojo unikalių fermentų tyrimus Biotechnologijos institute. Kartu su Lietuvos mokslininkais paskelbė eilę straipsnių. 2010 m. pateiktas bendras prof. S.E. Helfordo laboratorijos ir Biotechnologijos instituto mokslininkų projektas Britanijos karališkajai mokslo draugijai (*Royal Society*). Profesorius vedė seminarus 2003 m. Vilniuje vykusiuose tarptautiniuose Baltymų-DNR sąveikos kursuose, kuriuos organizavo JAV Nacionalinė mokslų akademija. Jo paskaitos Biotechnologijos Institute sulaukė plataus atgarsio tarp biologijos srities mokslininkų ir studentų. Lietuvos mokslininkai stažavosi prof. S. E. Helfordo laboratorijoje Bristolyje.

Professor Stephen Edgar Halford

Emeritus Professor of Biochemistry and molecular cell biology, School of Biochemistry, University of Bristol. He was born 22 September, 1945, Cairo, Egypt, died on 13 July 2022

Stephen Halford was a biochemist whose innovative studies transformed our understanding of how enzymes interact with their substrates. He used relaxation spectroscopy to relate the dynamics of proteins in solution – similar to their natural state in the body – with their structure as revealed by X-ray crystallography.

Academic Qualifications

1986: University of Bristol. D.Sc. (by submission of published papers).

1970: University of Bristol. Ph.D. in Biochemistry.

1967: University of Bristol. B.Sc. in Biochemistry (grade II.i).

Previous Appointments

1989-1995: Reader, Department of Biochemistry, University of Bristol.

1976-1989: Lecturer, Department of Biochemistry, University of Bristol.

1975-1976: Temporary Lecturer, Department of Biochemistry, University of Bristol.

1972-1975: Research Associate with Professor H. Gutfreund FRS, Department of Biochemistry, and with Professor M. H. Richmond FRS, Department of Microbiology, University of Bristol. Also collaborations with Professor B. D. Sykes FRS, then in the Department of Chemistry at Harvard.

1970-1972: Research Fellow with Professor M. J. Schlesinger, Department of Microbiology, Washington University, St Louis, USA.

Research

Since starting his own laboratory in 1977, all of his research has been on the reactions of enzymes on DNA, principally restriction endonucleases. S. Halford with colleagues examined first several enzymes that recognise and cleave DNA at solitary sites, primarily the EcoRV endonuclease. This work elucidated the mechanisms by which these enzymes interact with their recognition sequences in DNA, how they cleave DNA almost exclusively at these sites and nowhere else on the DNA, despite often binding to all DNA sequences with similar affinities. It also helped

to elucidate mechanisms for the hydrolysis of phosphodiester bonds in DNA, in particular the role of divalent metal ions in both catalysis and specificity. These studies have since become the framework for numerous subsequent studies in many other laboratories on the mechanisms of enzymes acting on DNA, not only other nucleases but also replication, recombination and repair systems. Other studies, in collaboration with Dr V. Siksnyš (Institute of Biotechnology, Vilnius, Lithuania), on a unique restriction enzyme that functions without metal ions revealed significant new insights into another class of enzymes cutting phosphodiester bonds, yielding a novel mechanism for phosphodiester hydrolysis.

Since 1983 to 1996, this laboratory also examined the mechanism of site-specific recombination by Tn21 resolvase from the transposon. The main objectives of this work was to elucidate the processes that lead to the juxtaposition of distant sites in DNA molecules, and the organisation of higher-order assemblies involving multiple protein subunits spanning separate sites. However, these questions can now be addressed with any of the restriction enzymes that cut DNA after interacting with two recognition sites.

Special Awards, Honors and Distinctions

2011: Foreign Member of the Lithuanian Academy of Sciences

2004: Elected Fellow of the Royal Society

2001: Novartis Medal and Prize. Awarded annually by the Biochemical Society “in recognition of outstanding contributions to the development of any branch of biochemistry”.

1998-2001 and 2001-2003: Wellcome Trust Research Leave Fellowships. These fellowships enabled me to focus exclusively on my research over these periods, during which the Wellcome Trust covered the salary for a replacement lecturer. The Department of Biochemistry appointed first Dr Nigel Savery and then Dr Matthew Avison to this post. Both Drs Savery and Avison have since proceeded to permanent lectureships at this University, in the Departments of Biochemistry and Cellular and Molecular Medicine respectively

Member of Editorial Board, Nucleic Acids Research, from 1995

1992-1993: Royal Society Leverhulme Trust Senior Research Fellowship. Funds from the Leverhulme Trust covered my salary during this period, allowing me to focus solely on research, while the salary savings were used to appoint three post-doctoral Research Associates in the Department of Biochemistry to temporary lectureships for three months each.

Parengė:

Valerija Paškauskienė

LMA Technikos mokslų skyriaus vyriausoji koordinatore

Naudoti šaltiniai:

LMA archyvas. Asmens byla.