

Imperial College London

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The objective of the Speck laboratory is to discover new mechanisms in DNA replication and to understand the function of replication factors in hetero-chromatin formation, which has relevance for genomic stability, epigenetic memory & gene regulation, development and aging. Knowledge derived from this work is exploited in collaboration with ICL Chemistry and MRC-LMS for the development of novel DNA replication inhibitors. The laboratory employs biochemical, genetic, cryo-electron microscopy, chemical-biology and high-resolution genomic approaches. Christian Speck received his Ph.D. in Biochemistry from the Freie Universität Berlin, while researching bacterial gene regulation and DNA replication in the laboratory of Prof. Walter Messer at the Max-Planck Institute of Molecular Genetics, Germany. He was awarded a Leukemia & Lymphoma Society fellowship to train with Dr. Bruce Stillman at Cold Spring Harbor Laboratory, USA. Since 2006 he runs his laboratory initially at the Medical Research Council and since 2013 at Imperial College London. He has been elected into the Royal Society of Biology, been awarded a Wellcome Trust Investigator Award and served on several Scientific Evaluation Panels (H2020, ANR, DAAD) and editorial boards. He supports the development and equality of the institute as the chair of the Athena SWAN committee; Bronze and Silver awards in 2014/2017. In 2017 he has set-up a staffed cryo-EM facility at the Hammersmith Campus, including a 200KV FEG cryo-EM, Vitrobot IV, a data storage server and a multi-GPU computer cluster.

EDUCATION AND ACADEMIC POSITIONS

2013 – present	Imperial College London, UK Professor in Genome Biochemistry & Molecular Biology
2015 – present	Wellcome Trust Investigator, UK
2006 – 2013	MRC Clinical Science Centre, UK Group Leader
2000 – 2006	Cold Spring Harbor Laboratory, USA Leukemia & Lymphoma Society Postdoctoral Fellow (Advisor: Dr. Bruce Stillman)
1997 - 2000	Max-Planck-Institute of Molecular Genetics, Germany PhD, Biochemistry (Advisor: Prof. Dr. Walter Messer)
1995 - 1997	Freie Universität Berlin, Germany Diplom, Biochemie
1995 - 1997	Beuth Hochschule für Technik Berlin, Germany Diplom-Ingenieur, Biotechnologie

SELECTED HONORS AND AWARDS / EXTERNAL COMMITTEES

2018	Scientific evaluation panel member: Horizon 2020-WIDENING-2018, DAAD Germany
2017 - present	Set-up and management of the Hammersmith cryo-EM facility
2017 - present	Member of Wellcome Trust LonCEN Cryo-EM consortium (ICL, ICR, QMU, KCL)
2016 - present	Panel member: Horizon 2020-MSCA-IF-2016/2017- LIF, WIDESPREAD 2018
2016	Scientific evaluation panel member: French National Research Agency (ANR)
2015	Wellcome Trust Investigator Award
2015	Elected Fellow of the Royal Society of Biology
2015 - present	Biochemical Journal (Editorial Advisory Panel Member)
2013 - present	Chair of the departmental Athena SWAN Committee – Bronze Award 2014 / Silver 2017
2013 - 2017	Microbial Cell & Frontiers in Bioscience (Editorial Board Member)
2007 - present	Grant reviewer for >15 scientific grant-awarding bodies and funding bodies across the UK, America, Europe and Asia including MRC, Royal Society UK, CRUK, HFSP, Wellcome Trust, BBSRC, French National Cancer Institute (INCa), Research Grant Council Hong Kong, Fondation pour la Recherche Médicale (FMR) France, NSF - USA
2004 - present	Regular journal reviewer for over 20 different international life science journals including Nature, NSMB, NCB, Nature Com, Mol Cell, Cell Reports, Gen & Dev, EMBO J, PNAS
2001 - 2004	The Leukemia & Lymphoma Society Postdoctoral Fellowship
1997 - 2000	Max-Planck Society PhD Fellowship

RESEARCH & EQUIPMENT GRANTS (TOTAL FUNDING AWARDED: £ 10,059,179)

2021 - 2025	EPSRC iCASE Studentship with Refeyn - £140,000 (PI)
2020 - 2023	BBSRC project grant - £970,354 (PI)
2019 - 2023	MRC funded PhD studentship - £140,000 (PI)
2019 - 2020	BBSRC equipment grant - £182,677 (Co-I)
2018 - 2021	BBSRC project grant - £446,669 (PI)
2018 - 2023	Wellcome Trust Equipment Award - £197,672 (Co-I)
2017 - 2022	Wellcome Trust Cryo-Electron Microscopy Equipment Award - £3,000,000 (Co-I)
2017 - 2020	EPSRC funded student - £130,000 (PI)
2015 - 2020	Wellcome Trust Investigator Award - £1.676.296 (PI)
2016 - 2019	BBSRC project grant - £406.505 (PI)
2014 - 2017	BBSRC project grant - £393.006 (PI)
2014 - 2018	MRC funded PhD student £122.500 (PI)
2014 - 2017	EPSRC funded studentship £96.000 (Co-PI)
2011 - 2016	MRC funding - Program support £879.500 (PI)
2010 - 2014	MRC funded PhD student £118.500 (PI)
2008 - 2012	MRC funded PhD student £117.000 (PI)
2007 - 2011	MRC funded PhD student £115,000 (PI)
2006 - 2010	MRC funding - Program support - £787.500 (PI)

RESEARCH GROUP TEACHING AND TRAINING

2021	Current group: 14 (7 postdoctoral fellows, 5 PhD students, 1 technician, 1 lab manager).
2014 - 2015	Imperial College Educational Program for Lecturers
2014-	Lecturing - MSc Molecular Sciences
2009-	Lecturing for MRC-LMS International PhD Program
	Highly rated lecturer (LMS students 2011/2012 questionnaire)
2009-	Member of the Postgraduate Training and Education Committee
2008-	Internal / external examiner of 12 PhD theses in UK, Italy, Germany
2007-	Supervision of 8 PhD students / 4 graduated (2011 / 2014 / 2018 / 2020)
2007-	Supervision of 18 BSc, MSc and MRes students (Germany, France, Italy, UK, Canada)
2006-	Supervision of 11 Postdoctoral fellows
2006-	Mentor of >20 PhD students
2006 - 2009	Lecturing for the MRC MRes program

GRANTS OBTAINED BY GROUP MEMBERS (TOTAL FUNDING AWARDED: £ 602.000)

Shenaz Allyjaun	ICL Presidents Scholarship (2019-2023) - £140,000
Sarah Schneider	DFG Postdoctoral Fellowship (2018-2020) - £72,000
Yasunori Noguchi	JSPS Postdoctoral Fellowship (2018-2020) - £80.000
Max Reuter	DFG Postdoctoral Fellowship (2016-2018) - £72.000
Katalin Kondas	Jackson-Daphne-Trust (2016-2018) - £ 48.000
Alice Roedel	Erasmus student Fellowship (2014-2015) - £3.500
Carmen Herrera	MRC Millennium Fellowship (2012-2013) - £40.000
Stefan Samel	DFG Postdoctoral Fellowship (2011-2013) - £65.000
Christian Winkler	Erasmus student Fellowship (2012) - £2.500
Anne Musahl	Erasmus student Fellowship (2009) - £2.000
Nancy Stanslowsky	Erasmus student Fellowship (2009) - £2.000
Stefan Uhle	Marie Curie Intra-European Fellowship (2006-2007) - £70.000

INVITED LECTURES

2019	Next Generation Biophysics (MRC-LMB, Cambridge (Invited speaker)
2019	MDC Berlin / MRC-LMS London (Invited talk at summer school)
2018	Dundee University (Invited talk)
2016	41st FEBS congress Kusadasi / Ephesus, Turkey (Invited speaker and Chair)
2015	Cold Spring Harbor DNA replication meeting – (Invited speaker and Chair)
2015	German Cancer Research Center (DKFZ), Heidelberg, Germany (Invited talk)
2015	Sincrotrone Trieste SCpA, Italy (Invited talk)
2015	University of Geneva, Switzerland (Invited talk)
2015	University of Jena, Germany (Invited talk)
2014	3R Conference Gotemba Japan (Invited speaker)
2014	Oxford University (Invited talk)
2014	Warwick University (Invited talk)
2014	Wellcome Trust Conference Chromatin, Cambridge (Selected speaker)
2014	CNIO Madrid, Spain (Invited talk)

PUBLICATIONS

In total 46 publications, including 33 journal papers, 3 book chapters and 9 reviews. h-index= 29, >3500 citations (Google Scholar). Total IF= >394.

PAPERS PUBLISHED SINCE ESTABLISHMENT OF THE DNA REPLICATION GROUP

32. Hu Y, Tareen A, Sheu Y-J, Ireland W, **Speck C**, Li H, Joshua-Tor, L, Kinney J and Stillman B (2020) Evolution of DNA Replication Origin Specification and Gene Silencing Mechanisms **Nat Com** volume 11, Article number: 5175 – **IF 12.1**
31. Yuan Z*, Schneider S*, Dodd T*, Riera A*, Bai L*, Yan C, Magdalou I, Ivanov I#, Stillman B#, Li H#, and **Speck C#** (2020) Structural mechanism of helicase loading onto replication origin DNA by ORC-Cdc6; **Proc Natl Acad Sci U S A** Jul 28;117(30):17747-17756.– **IF 9.4**
30. Roman-Trufero M, Ito CM, Pedebos C, Magdalou I, Wang YF, Karimi MM, Moyon B, Webster Z, di Gregorio A, Azuara V, Khalid S, **Speck C**, Rodriguez T, Dillon N (2020) Evolution of an amniote-specific mechanism for modulating ubiquitin signalling via phosphoregulation of the E2 enzyme UBE2D3; **Mol Biol Evol.** 2020 Mar 7. pii: msaa060. doi: 10.1093/molbev/msaa060 – **IF 14.8**
29. Mendes ML, Lutz Fischer L, Chen1 ZA, Barbon M, J. O'Reilly F, Giese S, Bohlke-Schneider M, Belsom A, Therese Dau T, Combe CW, Graham M, Eisele MR, Baumeister W, **Speck C**, Rappsilber JS (2019) An integrated workflow for crosslinking mass spectrometry; **Molecular System Biology** Sep;15(9):e8994 - **IF 9.8**
28. Yu Y, Yue B, Ji S, Lohneis P, Kemper K, Silvis M, Qutob N, Rooijen E, Werner-Klein M, Li L, Dhawan D, Meierjohann S, Reimann M, Elkahoun A, Treitschke S, Dörken B, **Speck C**, Mallette FA, Zon LI, Holmen S, Peeper DS, Samuels, Schmitt CA, Lee S (2018). Targeting the senescence-overriding cooperative activity of structurally unrelated H3K9 demethylases in melanoma. **Cancer Cell** Apr 9;33(4):785 – **IF 23.2**
27. Noguchi Y*, Yuan Z*, Bai L*, Schneider S, Zhao G, Stillman B#, **Speck C#**, Li H# (2017) Cryo-EM structure of Mcm2-7 double hexamer on DNA suggests a lagging strand DNA extrusion model; **PNAS**, Nov 7;114(45):E9529-E9538 - **IF 9.7**
26. Riera A, Barbon M, Noguchi Y, Reuter LM, Schneider S, **Speck C** (2017) From structure to mechanism – understanding initiation of DNA replication; **Genes & Development**, Jun 1;31(11):1073-1088 - **IF 12.6** – review
25. Yuan Z*, Riera A*, Bai L*, Sun J*, Nandi S, Spanos C, Chen ZA, Barbon M, Rappsilber J#, Stillman B#, **Speck C#** and Li H# (2017) Structural basis of MCM2-7 replicative helicase loading by ORC-Cdc6 and Cdt1; **Nature Structure & Molecular Biology**, Mar;24(3):316-324 – **IF 13.3**
24. Tognetti. S, **Speck, C** (2016); Replicating repetitive DNA. **Nature Cell Biology** 18, 593-594. – **IF 19.7**
23. **Speck, C** (2016); Exceeding the limits – Cdc45 overexpression turns bad. **Cell Cycle** (in press). – **IF 5.3**
22. Herrera MC*, Tognetti S*, Riera A, Zech J, Clarke P, Fernández-Cid A, **Speck C** (2015); A reconstituted system reveals how activating and inhibitory interactions control DDK dependent assembly of the eukaryotic replicative helicase; **Nucleic Acids Research**, Sep 3. - **IF 9.1** * Shared first authorship
21. Chang F, Riera A, Evrin C, Sun J, Li H, **Speck C***, Weinreich M* (2015); Cdc6 ATPase activity disengages Cdc6 from the pre-replicative complex to promote DNA replication; **eLife**, Aug 25;4. - **IF 9.3** *Corresponding author
20. Sun J, Yuan, Z, Stillman, B*, **Speck, C*** and Li, H* (2015); Structure and function studies of replication initiation factors; The Initiation of DNA Replication in Eukaryotes; Springer Press - **book chapter** - *Corresponding author
19. Riera A and **Speck C** (2015); Licensing of replication origins; The Initiation of DNA Replication in Eukaryotes; Springer Press - **book chapter**
18. Riera A and **Speck C** (2015); MCM2-7 - Opening the gate to DNA Replication; **Cell Cycle**, 14(1):6-8 - **IF 5.3** – review
17. Silva N, Ferrandiz N, Barroso C, Tognetti S, Lightfoot J, Telecan O, Encheva V, Faull P, Hanni S, Furger A, Snidjers B, **Speck C** and Martinez-Perez E (2014); The fidelity of synaptonemal complex assembly is regulated by a signaling mechanism that controls early meiotic progression; **Developmental Cell**, Nov 24;31(4):503-11 - **IF 10.4**
16. Sun J*, Fernandez-Cid A*, Riera A*, Tognetti S, Yuan Z, Stillman B#, **Speck C#**, Li H# (2014); Structural and mechanistic insights into Mcm2-7 double-hexamer assembly and function; **Genes & Development**, Oct 15;28(20):2291-303 - **IF 12.6** * Shared first authorship # Corresponding author
15. Tognetti S, Riera A and **Speck C** (2014); Switch on the engine – how the eukaryotic replicative MCM2-7 helicase becomes activated; **Chromosoma**, Oct 12- **IF 3.3** - review
14. Samel AS, Fernández-Cid A, Sun J, Riera A, Tognetti S, Herrera MC, Li H, **Speck C** (2014); A unique DNA entry gate for regulated loading of the eukaryotic replicative helicase onto DNA; **Genes & Development**, Aug 1;28(15):1653-66 - **IF 12.6**
13. Riera A, Tognetti S and **Speck C** (2014); Helicase loading: How to build a MCM2-7 double-hexamer; **Seminars in Cellular and Developmental Biology**, Jun;30:104-9 - **IF 6.2** – review
12. Evrin C, Fernández-Cid A, Riera A, Zech J, Clarke P, Herrera MC, Tognetti S, Lurz R, **Speck C.** (2014); The ORC/Cdc6/MCM2-7 complex facilitates MCM2-7 dimerisation during pre-replicative complex formation; **Nucleic Acids Research**, Feb 1;42(4):2257-69 - **IF 9.1**
11. Riera A, Li H*, **Speck C*** (2013); Seeing is believing – the MCM2-7 helicase trapped in complex with its DNA loader; **Cell Cycle**, Aug 21;12(18).- **IF 5.3** – review *Corresponding author

10. Sun J*, Evrin C*, Samel S, Fernández-Cid A, Riera A, Kawakami H, Stillman B#, **Speck C**#, Li H# ; Cryo-EM structure of a helicase loading intermediate containing ORC-Cdc6-Cdt1-MCM2-7 bound to DNA (2013); **Nature Structure & Molecular Biology**, August 5, (20), 944–951 – **IF 12.7** # Corresponding author
9. Fernández-Cid A, Riera A, Tognetti S, Herrera MC, Samel S, Evrin C, Winkler C, Gardenal E, Uhle S, **Speck C**. (2013); An ORC/Cdc6/MCM2-7 complex is formed in a multistep reaction to serve as a platform for MCM2-7 double-hexamer formation; **Molecular Cell**, Volume 50, Issue 4, 577-588, 18 April - **IF 15.3**
8. Riera A*, Fernández-Cid A*, **Speck C** (2013); The ORC/Cdc6/MCM2-7 complex, a new power player for regulated helicase loading; **Cell Cycle**, Jun 24;12(14) - **IF 5.3 – review** *Shared first authorship
7. Evrin C, Fernández-Cid A, Zech J, Herrera MC, Riera A, Clarke P, Brill S, Lurz R, **Speck C**. (2012); In the absence of ATPase activity, pre-RC formation is blocked prior to MCM2-7 hexamer dimerization. **Nucleic Acids Research**, Mar 1;41(5):3162-72 - **IF 9.1**
6. Sun J, Kawakami H, Zech J, **Speck C**, Stillman B, Li H. (2012); Cdc6-Induced Conformational Changes in ORC Bound to Origin DNA Revealed by Cryo-Electron Microscopy. **Structure** Mar 7;20(3):534-44. – **IF 6.3**
5. Chabes A, **Speck C**, Johansson E (2011); A top-down view on DNA replication and recombination from 9,000 feet above sea level. **Genome Biology: Biology for the post-genomic era** 27 Apr – **IF 9.0 – review**
4. Evrin C, Clarke P, Zech J, Lurz R, Sun J, Uhle S, Li H, Stillman B, **Speck C** (2009); A double-hexameric MCM2-7 complex is loaded onto origin DNA during licensing of eukaryotic DNA replication. **Proc Natl Acad Sci U S A**. Dec 1;106(48):20240-5 – **IF 10.2**
3. Chen Z, **Speck C***, Wendel P, Tang C, Stillman B, Li H (2008); The architecture of the DNA replication origin recognition complex in *Saccharomyces cerevisiae*. **Proc Natl Acad Sci U S A**. Jul 29;105(30):10326-31. **IF 10.2** *shared first author
2. **Speck C**, Stillman B (2007); Cdc6 ATPase activity regulates ORC-Cdc6 stability and the selection of specific DNA sequences as origins of DNA replication. **J Biol Chem**. Apr 20;282(16):11705-14. – **IF 4.8**
1. Majka J, **Speck C** (2006); Analysis of protein — DNA interactions using surface plasmon resonance. **Adv Biochem Eng Biotechnol**. 104:13-36. – **IF 4.3 Methods**