CURRICULUM VITAE

Anthony J. Cesare

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Date of birth: 2 September 1977
Citizenship: USA, Australian permanent resident

Education

1999	B.S. Willamette University, Salem, Oregon, USA
2005	Ph. D. University of North Carolina at Chapel Hill (UNC-CH), USA

Appointments

1999 – 2000	Research Assistant: Medical College of Virginia w/ Prof. Richard Straub
2000 – 2005	PhD Student: UNC-CH w/Prof. Jack Griffith (Member, USA National Academy of Sciences)
2006 – 2009	Postdoctoral Fellow: CMRI w/ Prof. Roger Reddel (Member, Australian Academy of Sci.)
2009 – 2013	Postdoctoral Fellow: Salk Institute w/ Prof. Jan Karlseder
2013 – 2016	Group Leader: CMRI, Genome Integrity Group
2013 – 2019	Senior Lecturer: University of Sydney
2016 –	Unit Head: CMRI, Genome Integrity Unit
2020 –	Associate Professor: University of Sydney

Fellowships

2006	American-Australian Association Sir Keith Murdoch Fellowship
2006 – 2008	USA National Science Foundation International Research Fellowship
2009 – 2012	USA National Institutes of Health Ruth L. Kirschstein T32 NRSA
2013 – 2018	Cancer Institute NSW Future Research Leader Award

Awards and Distinctions

1999	Graduation with academic honors (Willamette University)
1999	Nancy K. Detering-Waechter Award (most outstanding biochemistry student at W. University)
2002	Young Cancer Investigator Fellow 17th annual Aspen Cancer Conference
2003	Best oral presentation, UNC Cell and Molecular Biology Symposium
2005	Keenan/Edwards-Hobgood Fellowship (most outstanding graduating Ph.D. student in the UNC-CH Curriculum in Genetics and Molecular Biology)
2005	UNC-CH Lineberger Comprehensive Cancer Center Graduate Fellow award (most outstanding graduating Ph.D. student in the UNC-CH LCCC)
2006	Best oral presentation, Australian Telomere Workshop
2008	Sydney Cancer Conference GalxoSmithKline Innovation Award
2011	Salk Institute Society of Research Fellows travel award
2012	Best oral presentation, Salk Institute Trainee Symposium
2016	CMRI Research Excellence Award

RESEARCH

Ph.D. and Post-doctoral research. My trainee research focused on telomere biology. During my Ph.D. with Jack Griffith I used electron microscopy and biochemistry to investigate telomeric DNA structure in human, plant, and yeast cells. During this time, I discovered circular extrachromosomal telomeric DNA species (called "t-circles") and established these structures as a marker for ALT-positive cancers (Cesare & Griffith 2004 *MCB*, Cesare et al 2008 *MCB*). Currently, telomere circles are the most commonly used tool to identify ALT-positive cancer cells. As a post-doctoral fellow first with Roger Reddel, and then with Jan Karlseder, I investigated mechanisms of physiological telomere deprotection in human cells. I discovered that mammalian telomeres can adopt an "intermediate-state" that is receptive to the DNA damage response (DDR) whilst remaining resistant to end-to-end chromosome fusions (Cesare et al 2009, *NSMB*). I further elucidated that the intermediate state results from TRF2 independent regulation of ATM

activity and DNA repair, and that the DDR induced by telomere deprotection is distinct from the DDR induced by double strand breaks (Cesare et al 2009 *NSMB*, Kaul et al 2012 *EMBO Rep*, Cesare et al 2013 *Mol Cell*). These discoveries led to my proposal of a three-state model of telomere protection describing how different states of telomere protection independently regulate telomere-dependent cell cycle arrest and cell death during aging (Cesare & Reddel 2010 *Nat Rev Genet*, Cesare & Karlseder 2012 *Curr Opin Cell Bio*). Additionally, in collaboration with Makoto Hayashi I co-discovered that mitotic arrest induces a telomere specific DDR that induces mitotic death (Hayashi et al 2012 *NSMB* & 2015 *Nature*).

Independent laboratory. My independent laboratory broadly focuses on processes that maintain genome stability in mammalian cells, and the cellular consequences when these mechanisms fail.

Telomere biology: We recently identified that telomere-loops (t-loops) function specifically to regulate ATM activity at human and mouse telomeres (Van ly et al 2018 *Mol Cell*). To accomplish this, we developed the capacity to visualize telomere structure using super-resolution microscopy. This led to a productive collaboration with Simon Boulton's lab at the Crick Institute where we identified how TRF2 regulates t-loop structure during the cell cycle (Sarek et al 2019 *Nature*) and novel mechanisms of telomere protection in pluripotent cells (Ruis et al 2020 *Nature*). Additionally, we have developed proximity labelling techniques and unbiased mass spectrometry to identify spatiotemporal regulators of ALT and mitotic telomere deprotection. We are currently following novel leads generated through these approaches.

Replication stress response: We identified that nuclear filamentous actin (F-actin) plays a central role in the replication stress response (Lamm et al *Nature Cell Biology* 2020). This novel pathways is regulated by ATR and mTORC1 alters nuclear architecture to facilitate replication stress repair This project was extended in collaboration with Agnel Sfeir's laboratory at NYU to show that nuclear actin forces promote relocalization of replication stressed telomeres to the nuclear periphery (Pinzaru et al, *Genes & Development* 2020). These projects rely heavily on live cell imaging, including our collaborative development of novel image analysis tools that revealed directed movement of replication foci along nuclear actin fibres as a key event in the replication stress response. We also identified that lethal replication stress induces mitotic death in the immediately following cell division through parallel mechanisms of WAPL-dependent cohesion fatigue and telomere deprotection (Masamsetti et al, *Nature Communications,* 2019). To move these projects forward, our lab developed proficiency in whole genome CRISPR/Cas9 screening. We have now identified novel genetic regulators of mitotic death and replication stress repair that we are investigating in the lab. In a related project we are using live-cell imaging and CRISPR/Cas9 screening in collaboration with the Sydney West Radiation Oncology Network to elucidate mechanisms of radiation sensitivity and resistance in human cancer cells.

Genome Stability in Stem Cells: We discovered that pluripotent murine cells maintain t-loops in the absence of the essential somatic gene *TRF2* revealing that somatic telomere protective mechanisms are not conserved in pluripotent cells (Ruis et al 2020 *Nature*). We have extended our interest in pluripotency and identified that the replication stress response differs between naïve and primed stem cells and are currently working to identify the underlying mechanism(s).

Chromatin architecture and genome stability: In collaboration with Liz Hinde (U. Melbourne Bio21) we discovered that ATM and RNF8 regulate chromatin compaction and decompaction at DSB loci to demarcate the repair foci from the surrounding genomic environment (Lou et al *PNAS* 2019). The lab is now endeavoring to in a collaboration with Phillippa Taberlay to understand the role of chromatin remodelers in the replication stress response.

EXTERNAL FUNDING TO MYSELF OR MEMBERS OF MY LABORATORY

Total: $11,106,817

$5.85M as lead investigator/CIA; $8.18M in research/personnel support; $ $3.62M in equipment grants

Funding awarded to AJ Cesare

2006	AJ Cesare. American-Australian Association Sir Keith Murdoch Fellowship. $20,000 USD
2006 – 2008	AJ Cesare. USA NSF International Research Fellowship. $114,900 USD
2008	AJ Cesare. Cure Cancer Australia Project Grant. $75,000
2009 – 2012	AJ Cesare. USA NIH, T32 Ruth L. Kirschstein NRSA. $135,000 USD.
2013	RR Reddel, AJ Cesare, TM Bryan, HA Pickett, K MacKenzie, L Lau, and J Curtian. Australian Cancer Research Foundation (ACRF) equipment grant. ACRF Telomere Analysis Center. $2,000,000.
2013	RR Reddel, AJ Cesare, TM Bryan, HA Pickett, K MacKenzie, L Lau, and J Curtian. Ian Potter Foundation, ACRF Telomere Analysis Centre supporting grant. $100,000

2013 – 2016 AJ Cesare. NHMRC Project Grant (1053195). Ubiquitin and SUMO DNA damage response signaling at deprotected telomeres during the cell cycle. $292,181.

2013 – 2018 AJ Cesare. Cancer Institute NSW Future Research Leader Award (11/FRL/5-02). Targeting TRF2 function to prevent cancer cell growth. $1,218,795.

2015 PR Robinson, M Chircop, RR Reddel, TM Bryan, and AJ Cesare. University of Sydney Equipment Grants Scheme. High content screening in-cell imaging system for fundamental and translational research in epilepsy, cancer and neurodegenerative disorders. $199,410.

2015 PR Robinson, M Chircop, RR Reddel, A McCluskey, J Sakoff, TM Bryan, and AJ Cesare. Cancer Institute NSW Research Equipment Grant (15/REG/1-06). An integrated in-cell cancer drug screening system. $499,762.

2015 – 2017 AJ Cesare. Cancer Council NSW Project Grant (RG 15-12). Kinase signaling in the Intermediate-state telomere cell cycle arrest pathway during human ageing and in disease. $360,000.

2016 AJ Cesare. A structural understanding, and quantitative measure, of telomere health. CMRI Excellence Foundation Award. $100,000.

2016 P Gunning, J McCarroll, E Hardeman, N Turner, T Boecking, K Gaus, M Biro, D James, G O'Neil, AJ Cesare, E Hinde. Cancer Institute NSW Research Equipment Grant (16/REG/0-05). Single-objective selective plane illumination microscope (soSPIM). $375,000

2016 - 2019 AJ Cesare and M Hayashi. NHMRC Project Grant (1106241). How replication stress activates the mitotic telomere DNA damage response to kill cancer cells. $486,467.

2016 - 2019 E Hinde and AJ Cesare. NHMRC Project Grant (1104461). The role of nuclear architecture in the DNA damage response. $561,966 (50% of funding to the Cesare lab).

2017 Philanthropy from Stanford Brown, Inc. 100% of funds to the Cesare lab. $127,411.

2018 K Gaus, M Biro, G O'Neill, AJ Cesare. (REG181200) Australia's first deformability cytometer – a novel tool for cancer mechanobiology and diagnosis. $450,000.

2018 – 2021 AJ Cesare. Sydney West Radiation Oncology Network. Genetics of radiation sensitivity and resistance. Funding for a post-doctoral salary and consumables for a collaborative study. $520,000

2018 – 2020 AJ Cesare. Goodridge Foundation. Understanding the genetics of chemotherapy sensitivity and resistance. $293,403

2019 – 2021 AJ Cesare. Neil and Norma Hill Foundation. $200,000

2019 – 2021 AJ Cesare. University of Tasmania. Agreement for funding half a post-doctoral salary and consumables for a collaborative post-doctoral scientist between the Cesare and Phillippa Taberlay Lab. $139,116.

2019 – 2021 HA Pickett and AJ Cesare. NHMRC Project Grant (1162886). Telomere integrity in human health and disease. $744,920 (50% of funding to the Cesare lab).

2020 – 2022 AJ Cesare. NHMRC Ideas Grant (1185870). Understanding a novel pathway in genome stability: mTOR and F-actin alter nuclear architecture to repair DNA replication stress. $568,603

2021 - 2023 AJ Cesare and SJ Boulton. ARC Discovery Project Grant (DP210103885). Understanding telomere privilege in pluripotent stem cells. $555,892

2021 - 2023 AJ Cesare and H Gee. NHMRC Ideas Grant (2004430). Understanding the molecular mechanisms of cell death in radiotherapy. $643,856

Funding to lab members (100% of funds to the Cesare lab)

2014 – 2016 VP Masamsetti. University of Sydney Australian Post-graduate Award. $76,000

2016 N Lamm. Smorgon Foundation Post-doctoral fellowship. $20,000.

2017 N. Lamm. University of Sydney Bridging Funds. $30,000.

2018 – 2020 N. Lamm. Cancer Institute NSW Early Career Fellowship. $599,135.

2020 – 2021 N. Lamm. Kids Cancer Alliance Project Grant. $200,000.

2021 – 2022 N. Lamm. NHMRC ideas grant 2001408, CIB, $100,000 allocated to the Cesare lab

PROFESSIONAL ACTIVITIES

Societies

2000 – 2003	UNC Cell and Molecular Biology Program
2008 – 2009	The University of Sydney Cancer Research Network
2009 – 2012	Salk Institute Cancer Biology Training Program
2009 – 2013	Salk Institute Society of Research Fellows
2014 –	Australia and New Zealand Society for Cell and Developmental Biology
2021 –	American Association for the Advancement of Science

CMRI Internal Committees and service

2013 –	CMRI Ph.D. student scholarship committee (member)
2014 –	CMRI Research Technology Operations Committee (member)
2014 – 2019	ACRF Telomere Analysis Centre operations committee (chair)
2015 – 2019	ACRF Telomere Analysis Centre scientific advisory committee (chair)
2016 –	CMRI Gender Equity Committee (member)
2017 –	Organizer and convener of the CMRI Institutional seminar series
2019 –	CMRI Biomedical Proteomics Core Scientific Advisory Committee (member)
2019 – 2020	CMRI Advanced Microscopy Centre Scientific Advisory Committee (chair)
2020 –	Organizer and convener of the CMRI virtual internal seminar series
2020 –	Westmead Research Hub Imaging Scientific Advisory Committee (co-chair).

External Committees

2015	EMBL Australia/UNSW Single Molecule Science faculty selection committee

Peer review

2006 –	Ad Hoc review: *Aging Cell*, *Biophysical Journal*, *Biotechniques*, *Cell Cycle, Cellular and Molecular Life Sciences, Cell Reports, Chromosoma*, *eLife*, *EMBO J, EMBO Reports, J. of Cell Science, J. Gerontology*, *Methods X*, *Nucleus, Nucleic Acids Research*, *Nature Communications, Oncotarget*, *PLoS Biology*, *PLoS Genetics*, *PNAS, Trends in Biochemical Sciences*, *Trends in Cancer, Trends in Genetics*
2014 –	External assessor for Australian NHMRC Project Grants
2015 – 2017	Australian NHMRC Project Grant Review Panel (member)
2016 –	Ad Hoc Review of grants for: European Research Council, Human Frontiers Science Program, Kids Cancer Alliance, Luminesce Alliance, Netherlands Organization for Scientific Research, Rosetrees Trust (UK), Swiss National Science Foundation, Worldwide Cancer Research
2020 – 2021	Australian NHMRC Ideas Grant Review Panel (member)

Conference Organization / Participation

2000 – 2003	Organization committee	UNC Cell & Molecular Biology Program Symposium
2012	Organization committee	The Salk Institute Cancer Symposium
2015	Organizer	Australian Cell Cycle Meeting
2015	Session Chair	CMRI Chemical Proteomics Symposium
2016	Session Chair	EMBO Telomeres, Telomerase & Disease
2017	Organizer	Australian Cell Cycle Meeting
2018	Session Chair	ComBio2018
2019	Organizing Committee Chair	Australian Cell Cycle Meeting
2020	Session Chair	Lorne Genome Conference

Media, Outreach and Fundraising

2006	Speaker at the American Australian Association gala (other speakers included Rupert Murdoch and Australian Prime Minister John Howard).
2011	Demonstration scientist at the opening of the $20M USD Waitt Advanced Biophotonics Center at the Salk Institute.
2011 – 2012	Participant and speaker in multiple Salk Institute fundraising events.
2012	My research was the focus of a *San-Diego Union Tribune* article: "Mitotic inhibitor function in chemotherapy explained by the Salk, Scripps scientists", 11 March 2012.
2013	My research was the focus of a *San-Diego Union Tribune* article: "Cancer-causing pathway explained", 11 July 2013.

2013 – 2015	Invited speaker at multiple Australian Cancer Research Foundation events including VIP luncheons and the Sydney Senior Expo.
2013 –	Featured speaker at numerous CMRI fundraising and scientific education events including the CMRI building foundation launch dinner.
2014	Formal media training at Olgilvy PR Health
2014	Interviewed by the Sydney Morning Herald for their article "*Telomeres – the invisible elixir of youth"*, 2 August 2014.
2015	Collaborative research featured in a *San-Diego Union Tribune* article: "*Cell suicide path further explained*", 24 June 2015.
2015	Interviewed and featured on Australia Channel 7 Sunrise and 6pm news broadcasts regarding of collaborative research with the Karlseder lab (National Broadcast).
2016	Featured speaker at the CMRI Major Donor Masquerade Ball that raised > $700,000 for research at CMRI.
2017	Speaker at the Westpac "Healthcare Innovation Presentation on Cancer Research"
2017	Featured speaker at the Stanford Brown Gala Dinner that raised $127,411 for research in my laboratory
2018	Presenter in the "Great Debate" at Westmead Hospital Week.
2018	Speaker at the Cancer Institute NSW Fellows Forum
2018	Research from my lab was featured in the Australian Academy of Science video series highlighting prominent Australian discoveries (https://goo.gl/CZBLKF).
2018	Panel Member in the "Paths to Independence in Academia" session during the Kids Cancer Alliance Early Career Showcase
2019	Interviewed on NSW Regional Chanel 7 regarding research in our lab funded at CMRI supported by a fundraising committee in rural NSW (Wagga Wagga)
2019	Interviewed by Sydney Chanel 10 regarding CMRI's national "Jeans for Genes" fundraising campaign

SUPERVISION AND MENTORSHIP

Post-doctoral scientists

David Van Ly	2013 –	Developed super-resolution imaging capacity in my lab. Study of t-loops. Currently a medical student at University of Notre Dame (Sydney, Australia), continues post-doctoral research on a casual basis. 1st author *Molecular Cell*, co-author *Nature* (2), *Nature Cell Biology..*
Ka Sin (Cassie) Mak	2015 – 2016	Discovered WAPL regulates replication stress mitotic death. Currently a regulatory affairs associate at MSD pharmaceuticals. co-author *Nature Communications.*
Sonja Frölich	2015 – 2016	Developed imaging capacity in the lab. Currently a Research officer Robinson Research Institute, University of Adelaide, Australia. Co-author *Molecular Cell*.
Noa Lamm-Shalem	2015 –	Hebrew University, Smorgon Foundation Fellow; CINSW Early Career Fellow, Multiple grants. 1st Author *Nature Cell Biology,* co-author *Nature Communications, Genes & Development*
Sam Rogers	2017 –	
Georgia Kafer	2017 –	Funded by the Neil and Norma Hill Foundation, co-author *Molecular Cell*, *Nature.* Currently Lecturer and Lab Head, University of the Sunshine Coast.
Aisling O'Connor	2017 –	Funded by the Goodridge Foundation
Radoslaw Szmyd	2018 –	Sydney West Radiation Oncology Network (SWRON) Basic Research Fellow
Kate Giles	2019 –	Joint Post-doc with Phillippa Taberlay, co-funded by the University of Tasmania

Ph.D. Students

Pragathi Masemsetti	2014 – 2018	Discovered mechanism of replication stress-induced mitotic death. Australian Postgraduate Award; Twice winner of Lorne Genome Conference best poster award (2016, 2017). 1st Author

		Nature Communications, Co-author *PNAS*. *Nature Cell Biology* Currently Post-doctoral researcher with Patrick Tam.

Master's Students

Patrick Stalder	2016 / 2017	Master's degree from ETH Zurich, completed his thesis research in my lab. Currently Ph.D. student with Paola Picotti at ETH Zurich.
Mariska Keizer (possible)	2021	Master's Degree from Leiden University in the Netherlands. Mariska was supposed to join the lab in 2020 and will come in 2021 if COVID related travel restrictions ease

Honours Students

Ronnie Low	2015/2016	1st Class Honours. Co-author papers in *Molecular Cell* and *Nature Communications.* Currently Ph.D. student with Tracy Putoczki WEHI (Melbourne, Australia)
Garima Moudgil	2017	1st Class Honours, Currently Medical Student University of Queensland (Brisbane, Australia)
Tymon Shih	2021	
Antonia Blackwell	2021	

Undergraduate and Medical Students

Jessica Clegg	2015 – 2016	Universioty of Sydney, Undergraduate Summer Scholarship.
Yi Ting (Jen) Cheung	2016 – 2017	University of Melbourne, Undergraduate Summer Scholarship
Lydia Treleavean	2017 – 2018	University of Melbourne, Undergraduate Summer Scholarship
Jessie Zhang	2017 – 2018	University of Sydney, Medical Student Summer Research
Tymon Shih	2019 – 2020	Monash University, Undergraduate Summer Scholarship
Lucy Fitschen	2019 – 2020	University of Wollongong, Undergraduate Summer Scholarship
Antonia Blackwell	2019 – 2020	UNSW, Undergraduate Summer Scholarship
Lea Maria Nathalie Cavalli	2020	University College London, Summer Research Experience
Hannah Loh	2020 – 2021	UNSW, CMRI Summer Scholarship Program
Savannah O'Connell	2020 – 2021	UNSW, CMRI Summer Scholarship Program

Research Assistants/Lab Manager

Jessie Zhang	2014 – 2015	Currently Medical Student, University of Sydney
Tara Bartolec	2016 – 2017	Currently Ph.D. Student with Marc Wilkinson, University of New South Wales
Scott G. Page	2018 –	Promoted to lab manager in 2020
Sienna Casolin	2020 –	Hired as part of collaboration with Sydney West Radiation Oncology Network.

Mentorship during my post-doctoral research

Zeenia Kaul	2008 – 2011	Mentored as a CMRI Ph. D. Student; Currently Founder and CEO ReHeva Botanical, Inc (Columbus, OH, USA)
Tobias Schmidt	2012	Mentored as University of Heidelberg master's student at the Salk Institute. Currently an EMBO Post-doctoral Fellow with Jan Karlseder, Salk Institute.

Student committees and review panels

Year(s)	Student	Laboratory	Role
2014	Eddy Thientosapol	Chris Jolly (Centenary Institute)	Mid-thesis review
2014-2017	Amin Sabri	Robyn Jamieson (CMRI)	Thesis Committee
2015-2018	Anais Amaya	Ian Alexander (CMRI)	Thesis Committee
2019-	Mariella Hurtado Silva	Phil Robinson (CMRI)	Thesis Committee

Thesis examiner

Master's Thesis: University New South Wales, University of Queensland
Ph.D. thesis: University of Melbourne (2), University of Wollongong, University of Queensland

COLLABORATIONS

Aziz Sancar, UNC-CH, Nobel Laureate, USA NAS	2002 – 2003	Rad17-RFC loads the Rad9-Rad1-Hus1 ring shaped molecular clamp onto DNA. Published in *PNAS*
Mike McEachern, University of Georgia (USA).	2003 – 2008	Discovery of t-circles in yeast and mechanism of t-circles formation from intra-telomere recombination. Papers in *MCB* (2) and *Nucleic acids Res*.
Prof. Giuseppe Attardi, California Institute of Technology, USA NAS	2004 – 2005	Macromolecular structure in mitochondrial DNA governs mitochondrial rRNA synthesis. Published in *Cell.*
A/Prof. Hilda Pickett, CMRI	2008 –	Collaboration on telomere biology. Discovery of telomere trimming (*EMBO J*). *P*apers on chromosome end protection in *Nature Structural & Molecular biology* and *Molecular Cell*.
Dr. Laure Crabbe, CNRS (Paris, France)	2011 –	Cell-cycle dependent telomere spatiotemporal nuclear localization. Papers in *Cell Reports, Molecular Cell* and *Nature Communications.*
Dr. Makoto Hayashi, Kyoto University (Japan)	2010 –	Study of the telomere DNA damage response in the context of the cell cycle. Papers in *Nature*, *Nature Structural & Molecular Biology, Molecular Cell*, and *Nature Communications*.
A/Prof. Tracy Bryan, CMRI	2013 –	Study of cell cycle dependent telomere biology. Paper in *Science Advances.*
Prof. Kat Gaus, UNSW (Australia)	2014 – 2018	Study of telomere macromolecular structure and chromatin architecture using advanced microscopy. Publication in *Molecular Cell.*
Dr. Liz Hinde, U. of Melbourne (Australia)	2014 – 2018	Study of chromatin dynamics using advanced microscopy, co-corresponding author paper in *PNAS*.
Prof. Anthony Braithwaite, University of Otago (Dunedin, NZ)	2016 – 2020	Study of the role of YB-1 in the cell cycle, multiple papers in *Cancers.*
Dr. Máte Biro, EMBL Australia and UNSW	2017 –	Analysis of fixed and live cell imaging to study the replication stress response. Paper in *Nature Cell Biology*
Prof. Simon Boulton, The Crick Institute (London)	2018 –	Telomere loops and mechanisms of chromosome end protection in somatic and stem cells. Two papers in *Nature.*
Associate Professor Agnel Sfeir, NYU	2018 –	Nuclear actin function in telomere biology. Paper in *Genes & Development*
Assoc. Prof Greg Neely, University of Sydney	2018 –	Mechanisms of cell death in chemotherapeutic intervention; and function of the DNA damage response in Parkinson's disease
Professor Paul Timpson Garvan Institute	2019 –	Intravital imaging of nuclear actin and genome stability. Paper in *Nature Cell Biology*

PRESENTATIONS

Conferences and Sympoisa

2002	Poster	Aspen Cancer Conference (CO, USA)
2003	Poster	Cold Spring Harbor Meeting, Telomeres and Telomerase (NY, USA)
2003	Talk	UNC-CH Cell & Molecular Biology Program Symposium (Chapel Hill, NC, USA)
2004	Poster	EMBO Telomeres & Genome Stability (Cambridge, UK)
2005	Talk	Cold Spring Harbor Telomeres & Telomerase (NY, USA)
2005	Invited Talk	Lineberger Cancer Center Symposium (Chapel Hill, NC, USA)

2006	Talk	Australian Telomere Workshop (Sydney)
2008	Talk	Sydney Cancer Conference (AUS)
2008	Poster	EMBO Meeting, Telomeres & DNA Damage Response (Switzerland)
2008	Talk	Australian Telomere Workshop (Sydney)
2009	Talk	Cold Spring Harbor, Telomeres & Telomerase (NY, USA)
2011	Invited Talk	Molecular Mech. of Aging & Genome Stability (Aleyeska, AK, USA)
2012	Talk	American Society for Biochemistry & Molecular Biology (San Diego, CA, USA)
2012	Talk	Salk Institute Trainee Symposium (La Jolla, CA, USA)
2012	Talk	EMBO Telomeres & DNA Damage Response (L'Isle-sur-la-Sorgue, FRA)
2013	Poster	Salk Institute Cancer Symposium (La Jolla, CA, USA)
2013	Poster	Cold Spring Harbor, Telomeres and Telomerase (NY, USA)
2013	Poster	Waitt Advanced Biophotonics Symposium (La Jolla, CA, USA)
2013	Invited Talk	National Young Cancer Researcher Symposium (Melbourne, AUS)
2014	Poster	Lorne Genome Conference (Lorne, AUS)
2014	Talk	Australian Telomere Workshop (Sydney, AUS)
2015	Poster	Lorne Genome Conference (Lorne, AUS)
2015	Invited Talk	Australian Microscopy & Microanalysis Research Facility Workshop (Sydney, AUS)
2016	Talk	Lorne Genome Conference (Lorne, AUS)
2016	Talk	EMBO Telomeres, Telomerase & Disease (Liège, Belgium)
2016	Invited Talk	Queenstown Research Week, Cancer Biology Satellite Meeting (Nelson, NZ)
2016	Invited Talk	ComBio2016: Australian Society for Biochem & Mol. Biology (Brisbane, AUS)
2017	Invited Talk	ZEISS Workshop on Automated Live Cell imaging (Westmead, AUS)
2017	Poster	Keystone Symposia on DNA Replication & Recombination (Santa Fe, NM, USA)
2017	Talk	Australian Biology of Ageing Conference (Sydney)
2017	Talk	Cold Spring Harbor Telomeres & Telomerase (Cold Spring Harbor NY, USA)
2018	Talk	Lorne Genome Conference (Lorne, AUS)
2018	Talk	The Hunter Meeting (Hunter Valley, AUS)
2018	Invited Talk	EMBO Telomere Biology in Health & Human Disease (Tróia, Portugal)
2018	Invited Talk	CINSW Fellows Forum (Sydney, AUS)
2018	Talk	EMBO Chromatin dynamics & nuclear organization in genome maintenance (Strasbourg, France)
2018	Talk	ComBio2018: Australian Society for Biochem & Mol. Biology (Sydney, AUS)
2019	Talk	Gordon Conference on Mammalian DNA Repair (Ventura, CA, USA)
2019	Talk	The Hunter Meeting (Hunter Valley, AUS)
2020	Invited Talk	EMBO Telomere Biology in Health & Human Disease (Cancelled due to COVID-19)
2020	Invited Talk	Garvan Signaling Symposium (Cancelled due to COVID-19)
2021	Invited Talk	Garvan Signaling Symposium (Sydney, AUS)
2022	Invited Talk	EMBO Telomere Biology in Health & Human Disease (Tróia, Portugal)

Invited Seminars / host

2008 St. Vincent's Institute of Medical Research (Melbourne, AUS) / Jörg Heierhorst
2008 Salk Institute (La Jolla, CA, USA) / Jan Karlseder
2012 University of North Carolina at Chapel Hill (USA) /Jack Griffith
2014 University of Sydney, Medical School Napean (AUS) / Hooshang Lahooti
2014 University of Sydney, Discipline of Pharmacology (AUS) / Kellie Charles
2014 Children's Hospital at Westmead (Sydney, AUS) / Jenny Byrne
2014 Centenary Institute (Sydney, AUS) / Chris Jolly
2014 University of Sydney, School of Molecular Bioscience (AUS) / Melanie White
2015 University New South Wales, School of Medical Sciences (AUS) / Kat Gaus
2015 ZEISS Microscopy Workshop (Sydney, AUS) / René Hessling
2015 QIMR Berghofer Medical Research Institute (Brisbane, AUS) / Steve Lane
2016 CNRS Gif, Institut de Biologie Intégrative de la Cellule (Paris, France) / Laure Crabbe
2016 University of Virginia at Charlottesville, Cancer Center (USA) / Dave Kashatus
2016 University of Pittsburgh, Hillman Cancer Center (USA) / Roddy O'Sullivan
2016 UCSD Osher Lifelong Learning Institute (USA), for a Lay audience / Lyle Kalish
2016 Garvan Institute of Medical Research (Sydney, AUS) / Andrew Burgess

2017 Lunenfeld-Tanenbaum Research Institute (Toronto, ON, Canada) / Dan Durocher
2017 University of Colorado BioFrontiers Institute (Boulder, CO, USA) / Tom Cech
2017 St. George and Sutherland Clinical School (Sydney, AUS) / Fatima El-Assaad
2017 Sydney West Radiation Oncology Network (AUS) / Harriet Gee
2017 Westmead Institute of Medical Research (Sydney, AUS) / Dinny Graham
2018 St. Vincent's Institute of Medical Research (Melbourne, AUS) / Andrew Deans
2018 U. of Queensland, Diamantina Institute (Brisbane, AUS) / Paul Clarke
2019 John Curtain School of Medical Research (Canberra, AUS) / Tamás Fischer
2019 University of Sydney Charles Perkins Center (Sydney, AUS) / Greg Neely
2019 Skirball Institute, New York University (New York City, USA) / Agnel Sfeir
2019 National Cancer Institute (Bethesda, MD, USA) / Eros Lazzerini Denchi
2019 National Institute of Environmental Health Sciences (Cary, NC, USA) / Tom Kunkel
2019 UNC-CH, Lineberger Comprehensive Cancer Center (USA) / Jack Griffith
2020 Pfizer Centers for Therapeutic Innovation (New York, Boston, San Diego, USA / Virtual) / Anand Gautam

Presentations by my laboratory members

Type	Year	Conference	Presenter
Talk	2015	Australian Cell Cycle Meeting (Sydney, AUS)	Pragathi Masamsetti
Poster	2015	Australian Cell Cycle Meeting	David Van Ly
Poster	2015	Australian Society for Medical Research annual meeting (Sydney, AUS)	Pragathi Masamsetti
Talk	2015	Westmead Hospital Symposium (AUS)	Pragathi Masamsetti
Poster	2016	Lorne Genome Conference (Lorne, AUS): *Winner of Poster Prize*	Pragathi Masamsetti
Poster	2016	EMBO Telomeres, Telomerase & Disease (Liège, Belgium)	Pragathi Masamsetti
Invited talk	2016	Queenstown Molecular Biology Cancer Satellite Meeting (Nelson, NZ)	Sonja Frölich
Invited talk	2017	Light Microscopy Australia (WEHI, Melbourne, AUS)	Sonja Frölich
Talk	2017	Lorne Genome Conference (Lorne, AUS)	Noa Lamm-Shalem
Poster	2017	Lorne Genome Conference	Noa Lamm-Shalem
Poster	2017	Lorne Genome Conference: *Winner of Poster Prize*	Pragathi Masamsetti
Poster	2017	Lorne Genome Conference	Tara Bartolec
Poster	2017	Lorne Genome Conference	Ronnie Ren Jei Low
Poster	2017	Lorne Genome Conference	Patrick Stalder
Talk	2017	Australian Cell Cycle Meeting (Sydney, AUS)	Noa Lamm-Shalem
Poster	2017	Australian Cell Cycle Meeting	Ronnie Ren Jei Low
Poster	2017	Australian Cell Cycle Meeting	Patrick Stalder
Poster	2017	Australian Cell Cycle Meeting	Pragathi Masamsetti
Poster	2017	Cold Spring Harbor Symposium (CSHL, New York, USA)	Pragathi Masamsetti
Talk	2017	Kids Cancer Alliance Early Career Researcher Forum (Sydney, AUS). *Winner for best talk*	Noa Lamm-Shalem
Talk	2018	Fusion 3rd DNA Replication/Repair Structures (Cancun, Mexico). *Winner of best short talk.*	Noa Lamm-Shalem
Poster	2018	The Hunter Meeting (Hunter Valley, AUS)	Noa Lamm-Shalem
Talk	2018	National Particle Therapy Symposium (Sydney, AUS)	Radoslaw Szmyd
Poster	2019	Lone Genome Conference (Lorne, AUS)	Aisling O'Connor
Poster	2019	Australian Cell Cycle Meeting (Sydney, AUS)	Aisling O'Connor
Poster	2019	Australian Cell Cycle Meeting	Georgia Kafer
Poster	2019	Australian Cell Cycle Meeting	Sam Rogers
Poster	2019	Australian Cell Cycle Meeting	Kate Giles
Poster	2019	Australian Cell Cycle Meeting	Radoslaw Szmyd
Poster	2019	Australian Cell Cycle Meeting	David Van Ly
Poster	2019	Australian Cell Cycle Meeting	Pragathi Masamsetti
Poster	2019	Australian Cell Cycle Meeting	Noa Lamm-Shalem
Talk	2019	Cold Spring Harbor DNA Replication & Genome Stability (NY, USA)	Noa Lamm-Shalem
Talk	2019	Kids Cancer Alliance Early Career Researcher Forum. (Sydney, AUS) *Winner of best talk award*	Sam Rogers
S. Chair	2019	Kids Cancer Alliance Early Career Researcher Forum.	Noa Lamm-Shalem
Talk	2020	Federation of the Israel Societies for Experimental Biology (Eliat, ISR)	Noa Lamm-Shalem
Talk	2020	Lorne Genome Conference (Lorne, AUS)	Georgia Kafer

PUBLICATIONS

42 published articles. Metrics (Google/Web of Science): h-index = 25/22; citations = 5,069/3,265; citations per article = 120/77; articles with > 100 citations = 15/10.

1. Straub RE, Jiang Y, MacLean CJ, Ma Y, Webb BT, Myakishev MV, Harris-Kerr C, Wormley B, Sadek H, Kadambi B, Cesare AJ, Gibberman A, Wang X, O'Neill FA, Walsh D, and Kendler KS (2002). Genetic variation in the 6p22.3 gene DTNBP1, the human ortholog of the mouse dysbindin gene, is associated with schizophrenia. ***American Journal of Human Genetics***. 71, 337-348.

2. Bermudez VP, Lindsey-Boltz LA, Cesare AJ, Maniwa Y, Griffith JD, Hurwitz J, and Sancar A (2003). Loading of the human 9-1-1 checkpoint complex onto DNA by the checkpoint clamp loader hRad17-replication factor C complex in vitro. ***Proceedings of the National Academy of Sciences of the United States of America***. 100, 1633-1638.

3. Cesare AJ, Quinney N, Willcox S, Subramanian D, and Griffith JD (2003). Telomere looping in P. sativum (common garden pea). ***Plant Journal***. 36, 271-279.
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4. Cesare AJ and Griffith JD (2004). Telomeric DNA in ALT cells is characterized by free telomeric circles and heterogeneous t-loops. ***Molecular and Cellular Biology***. 24, 9948-9957.
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5. Groff-Vindman C, Cesare AJ, Natarajan S, Griffith JD, and McEachern M (2005). Recombination at long mutant telomeres produces tiny single- and double-stranded telomeric circles. ***Molecular and Cellular Biology***. 25, 4406-4412.

6. Martin M, Cho J, Cesare AJ, Griffith JD, and Attardi G (2005). Termination factor-mediated DNA loop between termination and initiation sites drives mitochondrial rRNA synthesis. ***Cell***. 123, 1227-40.

7. Fouché N, Cesare AJ, Willcox S, Özgür S, Compton SA, and Griffith JD (2006). The basic domain of TRF2 directs binding to DNA junctions irrespective of the presence of TTAGGG repeats. ***Journal of Biological Chemistry***. 281, 37486-37495.

8. Compton SA, Choi, J-H, Cesare AJ, Özgür S, and Griffith JD (2007). Xrcc3 and Nbs1 are required for the production of extrachromosomal telomeric circles in human alternative lengthening of telomeres cells. ***Cancer Research***. 67, 1513-1519.

9. Zhong Z-H, Jiang W-Q, Cesare AJ, Neumann AA, Wadhwa R, and Reddel RR (2007). Disruption of telomere maintenance by depletion of the MRE11/RAD50/NBS1 complex in cells that use alternative lengthening of telomeres. ***Journal of Biological Chemistry***. 282, 29314-29322.

10. Cesare AJ, Groff-Vindman C, Compton SA, McEachern MJ, and Griffith JD (2008). Telomere loops and homologous-recombination dependent telomeric circles in a Kluyveromyces lactis telomere mutant strain. ***Molecular and Cellular Biology***. 28, 20-29.

11. Cesare AJ and Reddel RR (2008). Telomere uncapping and alternative lengthening of telomeres. ***Mechanisms of Ageing and Development***. 129, 99-108.

12. Pickett HA, Cesare AJ, Johnston RL, Neumann AA, and Reddel RR (2009). Control of telomere length by a trimming mechanism that involves generation of t-circles. ***EMBO Journal***. 28, 799-809
    a. Associated commentary: (2009) *EMBO Journal. 28, 793-794.*

13. Cesare AJ, Kaul Z, Cohen, SB, Napier CE, Pickett HA, Neumann AA, and Reddel RR (2009). Spontaneous occurrence of telomeric DNA damage response in the absence of chromosome fusions. ***Nature Structural & Molecular Biology***. 16, 1244-1251.
    a. Associated commentary: (2009) *Nature Structural & Molecular Biology*. 16, 1205-1206.

14. Basenko E*, Cesare AJ*, Iyer S, Griffith JD, and McEachern MJ (2010). Telomeric circles are abundant in the stn1-M1 mutant that maintains its telomeres through recombination. ***Nucleic Acids Research***. 38, 182-189 (*equal contribution).

15. Cesare AJ and Reddel RR (2010). Alternative Lengthening of Telomeres: models, mechanisms and implications. ***Nature Reviews Genetics***. 11, 319-300.

16. Kaul Z, Cesare AJ, Huschtscha LI, Neumann AA, and Reddel RR (2012). Five dysfunctional telomeres predict onset of senescence in human cells. ***EMBO Reports***. 13, 52-59.
    a. Associated commentary: (2012) *EMBO Reports*. 13, 5-6.

17. Hayashi MT, Cesare AJ, Fitzpatrick JAJ, Denchi EL, and Karlseder J (2012). A telomere-dependent DNA damage checkpoint induced by prolonged mitotic arrest. ***Nature Structural & Molecular Biology***. 19, 387-394.
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18. Cesare AJ and Karlseder J (2012). A three-state model of telomere control over human proliferative boundaries. ***Current Opinion in Cell Biology***. 24, 731-738.

19. Crabbe L, Cesare AJ, Kasubowski J, Fitzpatrick JAJ, and Karlseder J (2012). Human telomeres are tethered to the nuclear envelope during post-mitotic nuclear assembly. ***Cell Reports***. 2, 1521-1529.

20. Cesare AJ, Hayashi MT, Crabbe L, and Karlseder J (2013). The telomere deprotection response is functionally distinct from the genomic DNA damage response. ***Molecular Cell.*** 51, 141-155.
    a. Commentary: (2013) *Nature Reviews Genetics*. 14, 597.

21. Lackner DH, Hayashi MT, Cesare AJ, and Karlseder J (2014). A genomics approach identifies senescence-specific gene expression regulation. ***Aging Cell***. 13, 946-950.

22. Cesare AJ (2014). Mitosis, double strand break repair, and telomeres: a view from the end. ***Bioessays***. 36. 1054-61.
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23. Hayashi MT, Cesare AJ, Rivera T and Karlseder J. (2015) Cell death during crisis is mediated by mitotic telomere deprotection. ***Nature***. 522, 492-496
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27. Han M, Napier CE, Frolich S, Everett RD, Cesare AJ and Reddel RR. Synthetic lethality of cytolytic HSV-1 in cancer cells with ATRX and PML deficiency (2019). ***Journal of Cell Science***. 132, doi: 10.1242/jcs.222349.

28. Lou J, Scipioni L, Wright BK, Bartolec TK, Zhang J, Masamsetti VP, Gaus K, Gratton E, Cesare AJ* and Hinde E* (2019). Phasor histone FLIM-FRET microscopy quantifies spatiotemporal rearrangement of chromatin architecture during the DNA damage response. ***Proceedings of the National Academy of Sciences of the United States of America***. 116, 7323-7332. (* corresponding authors).

29. Lamm N, Rogers S and Cesare AJ. The mTOR pathway: implications for DNA replication (2019). ***Progress in Biophysics & Molecular Biology***. doi: 10.1016/j.pbiomolbio.2019.04.002.

30. Masamsetti VP, Low RRJ, Mak KS, O'Connor A, Riffkin, CD, Lamm N, Crabbe L, Karlsdeder J, Huang DCS, Hayashi MT and Cesare AJ (2019). Replication stress induces mitotic death through parallel pathways regulated by WAPL and telomere deprotection. ***Nature Communications***. 10:4224, DOI: 10.1038/s41467-019-12255-w.

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41. Giles KA, Gould CH, Achinger-Kawecka J, Page SG, Kafer G, Rogers S, Luu PL, Cesare AJ, Clark SJ and Taberlay PC (2021). BRG1 knockdown inhibits proliferation through multiple cellular pathways in prostate cancer. ***Clinical Epigenetics***. 13:37, DOI: 10.1186/s13148-021-01023-7

42. Xiao L, Somers K, Murray J, Pandher R, Karsa M, Ronca E, Bongers A, Terry R, Ehteda A, Gamble LD, Issaeva N, Leonova KI, O'Connor A, Mayoh C, Venkat P, Quek H, Brand J, Kusuma FK, Pettitt JA, Mosmann E, Kearns A, Eden G, Alfred S, Allan S, Zhai L, Kamili A, Gifford AJ, Carter DR, Henderson MJ, Fletcher JI, Marshall G, Johnstone RW, Cesare AJ, Ziegler DS, Gudkov AV, Gurova KV, Norris MD and Haber M. Dual targeting of chromatin stability by the curaxin CBL0137 and histone deacetylase inhibitor Panobinostat shows significant preclinical efficacy in neuroblastoma. ***Clinical Cancer Research****.* In press

Additional submitted manuscripts

1. Oyston LJ, Kafer GR, Weichenberger CX, Blankenburg H, Domingues FS, van Roijen M, Khuong TM, Lau MT, Wang Q-P, Clark T, Dobrijevic E, Venn-Brown CMH, Lin YQ, Pai T-P, International Parkinson's Disease Genomics Consortium (IPDGC), Penninger JM, Pramstaller PP, Sutherland G, Hicks AA, Cesare AJ and Neely GG. MCMBP/McFly is critical for alpha-synuclein-dependent dopaminergic cell loss.

2. Lamm N, Rogers S and Cesare AJ. Chromatin mobility and relocation in DNA repair.
    a. Invited review submitted to *Trends in Cell Biology*

Book Chapters

1. Cesare AJ, and Reddel RR (2007) Alternative lengthening of telomeres in mammalian cells. *Origin and Evolution of Telomeres*. Landes Bioscience. Editors: Nosek J. and Tomaska L. Open access location: http://www.landesbioscience.com/curie/chapter/3548/

2. Compton SA, Cesare AJ, Fouché N, Özgür S, and Griffith JD (2007) T-loops, t-circles, and slippery forks. *Origin and Evolution of Telomeres*. Landes Bioscience. Editors: Nosek J. and Tomaska L. Open access location: https://www.landesbioscience.com/curie/chapter/3601/