

Professor Christopher Mark Overall, BDS, BSc (Hons), MDS, PhD, FCAHS, FRSC*Distinguished University Scholar**Honorary Professor, Albert-Ludwigs Universität Freiburg**Canada Research Chair Laureate in Protease Proteomics and Systems Biology**Yonsei Distinguished Scholar of Yonsei University, Seoul, Republic of Korea**Chair, Chromosome-Centric Human Proteome Project, Human Proteome Organization***CONTACT**

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Citizenship: Australian and Canadian**AFFILIATIONS**

U.B.C. Life Sciences Institute
 U.B.C. Centre for Blood Research
 U.B.C. Centre for Drug Research and Development
 U.B.C. Genome Science and Technology Graduate Program
 U.B.C. Creative Destruction Lab – West (UBC Sauder Business School)
 Fraser Health Authority Affiliated Researcher
 Canadian National Proteomics Network
 Australian Protease Network
 Institute of Molecular Medicine and Cell Research, Albert-Ludwigs Universität Freiburg, DE

EDUCATION

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
The University of Adelaide, South Australia, Australia	B.D.S.	1979	Dental Surgery
The University of Adelaide, South Australia, Australia	B.Sc. (Hons)	1980	Immunology
The University of Adelaide, South Australia, Australia	M.D.S.	1985	Oral Biology
The University of Toronto, Ontario, Canada		1984–1985	J.L. Eustace Fellow
The University of Toronto, Ontario, Canada	Ph.D.	1991	Biochemistry
The University of British Columbia, B.C., Canada <i>Protein Engineering Network of Centres of Excellence, Supervisor: Dr. Michael Smith, FRS</i>	Postdoctoral M.R.C. Centennial Fellow	1989–1992	Site-directed mutagenesis protein engineering

Special Academic Recognitions

Inaugural Fellow, Canadian Academy of Health Sciences (FCAHS) 2005
 Honorary Professor, Albert-Ludwigs Universität Freiburg, DE 2014
 Fellow, Royal Society of Canada (RSC) 2018

POSITIONS AND EMPLOYMENT

1989-2004 M.R.C. Centennial Post-Doctoral Fellow, Protein Engineering Network of Centres of Excellence;
1992-1997 Assistant Professor, Department of Oral Biology, UBC; **1992-1995** Clinician Scientist I, Medical Research Council of Canada (MRC); **1995-** Associate Member, Department of Biochemistry & Molecular Biology, UBC; **1995-1998** MRC Clinician Scientist II; **1999-2005** Canadian Arthritis Network of Centres of Excellence; **1997-2000** Associate Professor, Department of Oral Biological & Medical Sciences, UBC;
1997-1998 Visiting Scientist, British Biotech, Oxford UK; **1999-2000** Canadian Institutes of Health Research (CIHR) Scientist; **2000-** Full Professor, Department of Oral Biological & Medical Sciences, UBC; **2001-2009** CIHR Group in Matrix Dynamics; **2001-2023** Canada Research Chair (Tier I) in Protease Proteomics and Systems Biology; **2002-** Associate Member, UBC Prostate Centre; **2002-** UBC Centre for Blood Research;

2004-2005 Visiting Scientist, Protease Platform, Novartis Pharmaceuticals, Basel, Switzerland; **2005-2008** Director, Centre for Blood Research Proteomics Hub, UBC; **2005-2010** CBCRA Breast Cancer Metastases Team; **2007-2012** CIHR Team in Cardiovascular Disorders; **2008** Visiting Scientist, Centre for Proteomic Chemistry, Novartis, Basel, Switzerland; **2010-2014** External Senior Fellow, Freiburg Institute of Advanced Studies (FRIAS), Albert-Ludwigs Universität, Freiburg, DE; **2011-** Editorial Board, Molecular Cellular Proteomics; **2013-** Editorial Board, Biological Chemistry; **2014-** Honorary Professor, Albert-Ludwigs-Universität Freiburg, DE; **2015-** Associate Editor, Journal of Proteome Research; **2015** Chief Scientific Officer InterfeRx Antivirals; **2016-** Editor of *mSystems*; **2018-** Scientist, Creative Destruction Lab – West, UBC Sauder School of Business; **2018** Associate Member, Associate Member, Department of Obstetrics and Gynecology, UBC; **2018** Associate Member, Bioinformatics Graduate Program.

HONOURS AND AWARDS

2024 UBC Distinguished University Scholar; 2023- Yonsei Distinguished Scholar of Yonsei University; 2022 UBC John McNeill Excellence in Health Research Mentorship Award; 2022 Helmut Holzer Award, for “*great contribution to the advancement in the field of proteolysis*”; **2022 International Union of Biochemistry and Molecular Biology Lectureship**, Bled, Slovenia; **2018 Fellow, Royal Society of Canada; 2018 Xing Da Lectureship**, College of Chemistry and Molecular Biology, Peking University, Beijing, China; **2018 Visiting Scholar**, University of Cape Town, Cape Town, South Africa; **2017 Human Proteome Organization (HUPO) Discovery Award; 2017 Proteomass Scientific Society Award**, for “*outstanding contribution in pioneering the understanding of the processes that explain the architecture of living organisms*”; **2014 Tony Pawson Award** for “*outstanding contribution and leadership to the Canadian proteomics community*”, Canadian National Proteomics Network; **2013 Distinguished Scientist Award**, IADR; **2012 Barry Preston Lifetime Achievement Award**, Matrix Biology Society of Australia & New Zealand; **2011 Lifetime Achievement Award**, International Proteolysis Society; **2010** Chairman, Protease Gordon Research Conference; **2008 Helmholtz Award** for Proteases, Inhibitors and Biological Control, Slovenia; **2006 Killam Research Award**, Senior Science Category, UBC, Canada; **2004** Listed in the Contemporary Who’s Who; **2005 Fellow Canadian Academy of Health Sciences; 2003** Chairman, Matrix Metalloproteinase (MMP) Gordon Research Conference; **2003 Award for Research Excellence in Oral Health**, Canadian Institutes of Health Research (CIHR); **2002 CIHR Researcher of the Year; 2001** Tier 1 Canada Research Chair in Protease Proteomics and Systems Biology; **1999 Medical Research Council (MRC) of Canada Scientist Award; 1991 Young Investigator Award** for “*best scientist under 35 years*”, IADR; **1989-1992** Centennial Fellowship (1st place), MRC; **1989 Young Investigator Award**, MMP Conference; **1989** 1st Place Award, Canadian Dental Research Foundation; **1988 Young Investigator Award**, 3rd International Conference on Chemistry and Biology Mineralized Tissues; **1989 William J. Gies Award** for “*best publication in 1988*” (AADR); **1987 Edward H. Hatton Award**, 1st Place Postdoctoral, International Association for Dental Research (IADR); **1987 1st Place Postdoctoral Research Award**, CADR; **1985-1986** J.L. Eustace Scholarship, University of Adelaide, Australia; **1984-1989** Postdoctoral Fellowship, MRC; **1983 J.L. Eustace Memorial Award**, The University of Adelaide, S.A., Australia; **1979** Herbert Gill-Williams Scholarship, The University of Adelaide, S.A., Australia; **1978** Australian Dental Association Prize (1st placed final year student).

SELECTED CONSULTANT, ADVISOR, AND SIGNIFICANT COMMITTEE POSITIONS

2021-2024 Scientific Advisory Board, CytomX Therapeutics, Inc. South San Francisco, USA. **2018-2020** Consultant, Ocugenix Inc., Pittsburgh, PA, USA; **2018-** Chair, C-Human Proteome Project, HUPO; **2016-** Consultant, Blade Therapeutics, South San Francisco, CA, USA; **2016** Consultant, Akrieva Therapeutics, Thousand Oaks, CA, USA; **2015-2016** Consultant, Matrizyme Pharma, Toronto, ON, Canada; **2015-2018** Co-Chair, HUPO Chromosome Centric-Human Proteome Project (C-HPP); **2014, 2017-2018, 2023** Scientific Officer, CIHR Clinical Investigations Committee; **2019-2020** Treasurer, Human Proteome Organisation (HUPO); **2014-2019** Executive Committee, HUPO; **2014-** Advisory Committee, International Union of Basic and Clinical Pharmacology; **2014** Consultant, Biogen Idec, Cambridge, MA, USA; **2013-2015** Consultant, Galápagos Pharma, Paris, France; **2013-** Consultant, Proteases in Apoptosis Division, Genentech; **2011-2015** Independent Director, Patient Home Monitoring Corp., San Francisco, USA; **2011-2012** Consultant, Cardiome Pharma Corporation, BC, Canada; **2008-2012** Consultant, Facet Biotech, Redwood City, CA, USA; **2008-2010** Consultant, Direvo Biotech AG, Köln, Germany; **2007-2011** Member, Expert Advisory Board, FP7-EU-Project on Proteases in Inflammatory Bowel Disease; **2007-2012**

Research Advisory Network Member, Rimon Therapeutics, Toronto, ON, Canada; **2006-** Executive Member, B.C. Proteomics Network; **2005-2009** Member, External Advisory Committee, Center for Protease Research-COBRE, North Dakota State University, Fargo, USA; **2005-2008** Consultant, Inimex Pharmaceuticals Inc., Vancouver, BC; **2003-2015** Contract Consultant, Expert Protease Platform, Novartis Pharmaceuticals; **2005** Member, Review Panel, Novartis Pharmaceuticals, Cambridge, MA, USA; **2005** Member, International Proteolysis Society Council; **2005** Consultant, Larial Proteomics, Toronto, ON, Canada; **2004-2010** External Advisor, Huntington Disease Society Protease Group, HDSA Coalition for the Cure, USA; **2004-** Chair, Foreign Scientific Advisory Board, Australian Protease Network; **2004** Consultant, ChemoCentryx, San Francisco, USA; **2003-2007 Scientific Advisory Board**, Compound Therapeutics, Waltham, MA, USA; **2003-2004** Internal VP, Canadian Proteomics Network; **2003-2004** Consultant Procyon Biopharma, Dorval, QC, Canada; **2002-2004** Scientific Advisory Committee and Consultant, Biophage Pharma, Montreal, QC, Canada; **2000-2008 Scientific Advisory Board**, TwinStrand Corp., Burnaby BC, Canada; **2000-2005 Scientific Advisory Board**, Biopharmacopae Design Intl. QC, Canada.

ON-GOING RESEARCH SUPPORT

Canadian Foundation for Innovation: Transformative Systems Immunology, Co-PI, 2023 \$4,983,308.
BC Knowledge Development Fund: Protease Proteomics & Systems Biology. Co-PI, 2023 \$\$2,491,655.
CIHR Foundation Grant: From Proteolytic Networks to Human Biology and Disease. PI, 2016-2023, \$5,543,979 (ranked 9th >1,400 grants).
CIHR Project Grant: Host Cell Protein Substrates of Enterovirus Protease. Co-PI, 2018-2023, \$726,750.
Distinguished University Scholar: 2024, \$120,000.

SUMMARY OF PAST RESEARCH SUPPORT

Continuous salary awards at UBC (\$4.8M) culminating with a Distinguished University Scholar, 2024-2029. Ongoing funding over 30 years—including 24 CIHR/CHRP/CCS Operating Grants as PI, 7 Operating Grants as Co-PI, including NIH, >\$22M.
Co-PI on 8 Group/Team Grants (CIHR \$16.6M, CBCRA \$4.8M) and 11 other Team Grants >\$1M.
Canadian Foundation for Innovation (6) and Michael Smith Fellowship Health Research Teams >\$33.1M.

PRESTIGIOUS INVITED PRESENTATIONS

277 Invited conference plenary, keynote and oral presentations 1989-2023.
240 Invited presentations at research institutes, university departments and companies 1986-2023.
UBC Sole Representative, G7 Research Summit, Lake Louise, AB, Canada, Nov. 21 – 23, 2022.

RECENT CONFERENCE ORGANISATION

Chair, Matrix Metalloproteinase Gordon Research Conference, Big Sky, MT, USA, 2003
Chair, Proteolytic Enzymes and Inhibitors Gordon Research Conference, Barga, Italy, 2010.
Organizer of AAAS Symposium: Can Proteomics Fill the Gap Between the Genome and Phenotypes?
AAAS Annual Meeting in Vancouver, BC, Canada, Feb. 2012. Featured symposium by AAAS for the media
Session Chair, 8th General Meeting of the International Proteolysis Society, Cape Town, SA, Oct. 2013
Session Chair, Systems Biology, Protease GRC, Il Ciocco, Luca, Italy, June 2014
Session Chair, Proteomics and Cell Immunity, 14th HUPO World Congress, Vancouver, BC, Sept. 2015
Session Chair, Proteome Dynamics, 15th HUPO World Congress, Taipei, Taiwan, Sept. 2016
Session Chair, Omics Applications, 12th Australian Peptide Conference, Noosa, Qsl, Australia, Oct 2017
Organiser & Co-Chair, International Proteolysis Society 10th Annual Meeting, Banff, AB, Canada, Oct. 2017
Session Chair, Proteases as Cellular Signalling Molecules, Protease GRC, Il Ciocco, Luca, Italy, June 2018
Session Chair, Activity/Chemical Proteomics Session, 17th Annual World HUPO Conference, Oct 2018
Organiser and Chair, HUPO (Human Proteome Organization) Chromosome-Centric Human Proteome Project (C-HPP) Workshop, St Marlo, FR, May 2022, and Sept. Busan, Korea, Sept. 2023.

TRAINEES SUPERVISED

Trained 40 postdoctoral fellows, and graduated 14 Ph.D. and 6 M.Sc. students; 9 are now Full Professors (including 2 Department Chairs), 5 Associate Professors, and 6 Assistant Professors.

20 MOST SIGNIFICANT PUBLICATIONS

308 Career total, with an h-index = 105 and >39,200 citations—including 66 >100 – 199, 27 >200 – 499, 13 >500 – 999, 3 >1,000 – 1,500, and 1 >1,650, including 30 high-impact Nature (1), Science (2), Cell and daughter journal (27) papers, most as senior PI. Trainees are underlined, ^Co-Senior Author,

1. * Pablos, I., Machado, Y., de Jesus, H.C.R., Mohamud, Y., Kappelhoff, R., Lindskog, C., Vlok, M., Bell, P.A., Butler, G.S., Grin, P.M., Cao, Q.T., Nguyen, J.P., Solis, N., Abbina, S., Rut, W., Vederas, J.C., Szekely, L., Szakos, A., Drag, M., Kizhakkedathu, J., Mossman, K., Hirota, J., Jan, E., Lou, H., Banerjee, A., and Overall, C.M. 2021. Mechanistic Insights into COVID-19 by Global Analysis of the SARS-CoV-2 3CL^{pro} Substrate Degradome. **Cell Reports** **37**, Oct 26;37(4):109892. doi: 10.1016/j.celrep.2021.109892.
Citations as of Sep. 1, 2023: 54
2. * Klein, T., Fung, S.Y., Renner, F., Blank, M.A., Dufour, A., Kang, S., Bolger-Munro, M., Scurll, J.M., Priatel, J.J., Schweigler, P., Melkko, S., Gold, M.S., Viner, R.I., Régnier, C.H., Turvey, S.E., and Overall, C.M. 2015. The Paracaspase MALT1 Cleaves HOIL1 Reducing Linear Ubiquitination by LUBAC to Dampen Lymphocyte NF-κB Signalling. **Nature Communications** **6**, 8777, 1 – 17. doi:10.1038/ncomms9777. *Featured Article and Featured in Nature Immunology; Highlighted by Faculty of 1000.*
Citations as of Sep. 1, 2023: 147
3. * Quancard, J., Klein, T., Fung, S-Y., Renatus, M., Hughes, N., Israël, L., Priatel, J.J., Kang, S., Blank, M.A., Viner, R.I., Blank, J., Schlapbach, A., Erbel, P., Kizhakkedathu, J., Villard, F., Hersperger, R., Turvey, S.E., Eder, J., Bornancin, F., and Overall, C.M. 2019. An Allosteric MALT1 Inhibitor is a Molecular Corrector Rescuing Function in an Immunodeficient Patient. **Nature Chemical Biology** **15**, 304 – 313. *Citations by Sep. 1, 2023: 49*
4. * Bell, P.A., Scheuermann, S., Renner, F., Pan, C.L., Lu, H.Y., Turvey, S.E., Bornancin, F., Régnier, C.H., and Overall, C.M. 2022. Integrating Knowledge of Protein Sequence with Protein Function for the Prediction and Validation of New MALT1 Substrates. **Computational and Structural Biotechnology Journal** **20**, 4,717 – 4,732
5. * Marchant, D.J., Bellac, C., Moraes, T.J., Wadsworth, S.J., Dufour, A., Butler, G.S., Bilawchuk, L.M., Hendry, R.G., Robertson, A.G., Cheung, C.T., Ng, J., Ang, L., Luo, Z., Heilbron, K., Norris, M.J., Duan, W., Bucyk, T., Karpov, A., Devel, L., Georgiadis, D., Hegele, R.G., Luo, H., Granville, D.J., Dive, V., McManus, B.M., and Overall, C.M. 2014. A New Transcriptional Role for Matrix Metalloproteinase-12 in Antiviral Immunity. **Nature Medicine** **20**, 493 – 502. doi: 10.1038/nm.3508. *Featured in News and Views.* *Citations as of Sep. 1, 2023: 243*
6. * Dufour, A., Bellac, C.L., Eckhard, U., Solis, N., Klein, T., Kappelhoff, R., Fortelny, N., Jobin, P., Rozmus, J., Mark, J., Pavlidis, P., Dive, V., Barbour, S.J., and Overall, C.M. 2018. C-Terminal Truncation of IFN-γ Inhibits Proinflammatory Macrophage Responses and is Deficient in Autoimmune Disease. **Nature Communications** **9**, 2416, 1 – 18. doi: 10.1038/s41467-018-04717-4. *Citations as of Sep. 1, 2023: 58.*
7. * Eckhard, U., Bandukwala, H., Mansfield, M.J., Marino, G., Cheng, J., Wallace, I., Holyoak, T., Charles, T.C., Austin, J., Overall, C.M.^, and Doxey, A.C.^ 2017. Discovery of a Proteolytic Flagellin Family in Diverse Bacterial Phyla that Assembles Enzymatically Active Flagella. **Nature Communications** **8**, 521, 1 – 9. doi: 10.1038/s41467-017-00599-0. ^Joint Shared Senior Authors.
Citations as of Sep. 1, 2023: 37
8. * auf dem Keller, U., Prudova, A., Eckhard, U., Fingleton, B., and Overall, C.M. 2013. Systems-Level Analysis of Proteolytic Events in Increased Vascular Permeability and Complement Activation in Skin Inflammation. **Science Signalling** **6: rs2**, 1 – 15. doi: 10.1126/scisignal.2003512. *Featured cover.* *Citations Sep. 1, 2023: 102*
9. * Prudova, A., Gocheva, V., auf dem Keller, U., Eckhard, U., Olson, O., Akkari, L., Butler, G.S., Fortelny, N., Lange, P.F., Mark, J., Joyce, J., and Overall, C.M. 2016. TAILS N-Terminomics and Proteomics Show Protein Degradation Dominates Over Proteolytic Processing by Cathepsins in Pancreatic Tumors. **Cell Reports** **16**, 1,762 – 1,773. *Featured cover.*
Citations as of Sep. 1, 2023: 70
10. * Zhang, K., McQuibban, G.A., Silva, C., Butler, G.S., Johnston, J.B., Holden, J., Clark-Lewis, I., Overall, C.M.^, and Power, C.^ 2003. HIV-Induced Metalloproteinase Processing of the Chemokine Stromal Cell Derived Factor-1 Causes Neurodegeneration. ^Joint Senior and Communicating Authors. **Nature Neuroscience** **6**, 1064 – 1071.
Citations as of Sep. 1, 2023: 363
11. * Bellac, C.L., Dufour, A., Krisinger, M.J., Loonchanta, A., Starr, A.E., auf dem Keller, U., Lange, P.F., Goebeler, V., Kappelhoff, R., Butler, G.S., Burtnick, L.D., Conway, E.M., Roberts, C.R., and Overall, C.M. 2014. Macrophage Matrix Metalloproteinase-12 Dampens Inflammation and Neutrophil Influx in Arthritis. **Cell Reports** **9**, 618 – 632.
Citations as of Sep. 1, 2023: 103

12. * Fortelny, N., Cox, J.H., Kappelhoff, R., Starr, A.E., Lange, P.F., Pavlidis, P., and Overall, C.M. 2014. Network Analyses Reveal Pervasive Functional Regulation Between Proteases in the Human Protease Web. **PLoS Biology** **12**, e1001869. doi: 10.1371/journal.pbio.1001869. **Featured Weekly Editors Pick.**
Citations as of Sep. 1, 2023: **160**
13. * Dean, R.A., Cox, J.H., Bellac, C.L., Doucet, A., Starr, A.E., and Overall, C.M. 2008. Macrophage-Specific Metalloelastase (MMP-12) Truncates and Inactivates ELR⁺ CXC Chemokines and Generates CCL2, 7, 8, and 13 Antagonists: Potential Role of the Macrophage in Terminating PMN Influx. **Blood** **112**, 3444 – 3453.
Citations as of Sep. 1, 2023: **272**
14. * McQuibban, G.A., Gong, J.-H., Tam, E., McCulloch, C.A.G., Clark-Lewis, I., and Overall, C.M. 2000. Inflammation Dampened by Gelatinase A Cleavage of Monocyte Chemoattractant Protein-3. **Science** **289**, 1202 – 1206. *Selected by the Faculty of 1000 Biology.* Citations as of Sep. 1, 2023: **944**
15. * Huesgen, P.F., Lange, P.F., Rogers, L.D., Solis, N., Eckhard, U., Kleifeld, O., Goulas, T., Gomis-Rüth, F.X., and Overall, C.M. 2015. LysargiNase Mirrors Trypsin for Protein C-Terminal and Methylation-Site Identification. **Nature Methods** **12**, 55 – 58. Citations as of Sep. 1, 2023: **139**
16. * Lange, P. and Overall, C.M. 2011. TopFIND, a Knowledgebase Linking Protein Termini with Function. **Nature Methods** **8**, 703 – 704. Citations as of Sep. 1, 2023: **95**
17. * Schilling, O., Barré, O., Huesgen, P.F., and Overall, C.M. 2010. Proteome-Wide Analysis of Protein Carboxy Termini: C Terminomics. **Nature Methods** **7**, 508 – 511. *Featured in C&EN.* Citations as of Sep. 1, 2023: **157**
18. * Kleifeld, O., Doucet, A., auf dem Keller, U., Prudova, A., Schilling, O., Kainthan, R.K., Starr, A., Foster, L.J., Kizhakkedathu, J.N., and Overall, C.M. 2010. Isotopic Labelling of Terminal Amines in Complex Samples Identifies Protein N-Termini and Protease Cleavage Products. **Nature Biotechnology** **28**, 281 – 288. Citations as of Sep. 1, 2023: **530**
19. * Eckhard, U., Huesgen, P.F., Schilling, O., Bellac, C.L., Butler, G.S., Cox, J.H., Dufour, A., Goebeler, V., Kappelhoff, R., auf dem Keller, U., Klein, T., Lange, P.L., Marino, G., Morrison, C.J., Prudova, A., Rodriguez, D., Starr, A.E., Wang, Y., and Overall, C.M. 2016. Active Site Specificity Profiling of the Matrix Metalloproteinase Family: Proteomic Identification of 4,300 Cleavage Sites by Nine MMPs Explored with Structural and Synthetic Peptide Cleavage Analyses. **Matrix Biology** **49**, 37 – 60. Citations as of Sep. 1, 2023: **195**
20. * Schilling, O. and Overall, C.M. 2008. Proteome-Derived Database-Searchable Peptide Libraries for Identifying Protease Cleavage Sites. **Nature Biotechnology** **26**, 685 – 694. *Designated in the Exceptional Category by the Faculty of 1000 Biology for its significance.* Citations as of Sep. 1, 2023: **418**