

Christine J Watson

Curriculum Vitae



Personal Information

Name Christine Jannette Watson
Birthplace [REDACTED]
Marital status [REDACTED]
Home address [REDACTED]

Present Appointment

Professor of Cell and Cancer Biology, Department of Pathology, University of Cambridge, Cambridge
Vice-Principal and Professorial Fellow, Newnham College, Cambridge
Deputy Head School of Biological Sciences

Other Appointments

Affiliated Scientist, Wellcome Trust Stem Cell Institute, Cambridge
Assistant Tutor and Assistant Graduate Tutor, Newnham College
Visiting Professor, University of Rome Tor Vergata 2015
Visiting Professor, University of Rome Campus Bio-Medico 2017

Education/Qualifications

BSc (Hons) Biochemistry, University of Glasgow, 1971-1975
PhD Molecular Genetics, Imperial College, University of London, 1982-1985
MA University of Cambridge 2012
Fellow of the Higher Education Academy (ref. 22652)

Professional History

Postgraduate:

1975-1978 Beatson Institute for Cancer Research, Glasgow.
1978-1980 Laboratory of Cell Biology, C.N.R., Rome, Italy.
1980-1982 Dept. of Biochemistry, Imperial College of Science and Technology, London.

Postdoctoral Fellow:

1985-1986 Chester Beatty Laboratories, Institute of Cancer Research, Fulham Road, London.
1986-1989 Dept. of Biochemistry, University of St. Andrews, Fife.
1989-1992 Division of Molecular Biology, Roslin Institute (Edinburgh), Roslin, Midlothian.

Principal Investigator:

1992-1997 BBSRC Postdoctoral Fellow and Group Leader, Roslin Institute.
1997-1998 Group Leader, Molecular Medicine Centre, University of Edinburgh
1998-2010 Lecturer, Senior Lecturer and Reader, University of Cambridge
2010-date Professor of Cell and Cancer Biology, University of Cambridge

Membership of Professional Bodies

British Society for Cell Biology
European Cell Death Organisation

Awards and Honours

1994: Churchill Travelling Fellow
1992-1997: BBSRC personal fellowship
2004: Elected Chair of Gordon Research Conference on Mammary Gland Biology
2005-2008: BBSRC Research Development Fellowship
2014 Elected Secretary General of the International Association of Breast Cancer Research
2014 Member of Nuffield Council on Bioethics and Working group on Genome Editing
2017 Elected a Fellow of the Academy of Medical Sciences

Teaching

I teach on the NST Part II Pathology, Genomes and Cancer Option Course. I deliver lectures on this course covering cell death, oncogenic pathways, and stem cells in cancer. I also teach Part1A medical and veterinary medicine students on the Molecules in Medical Science course and contribute annually to Part IB Pathology NST and MVST Histopathology practical classroom teaching.
I was senior examiner for Part II Pathology in 2015.

Administrative Roles

Faculty Board - Faculty of Biological Sciences
University Biomedical Strategy Group
MIMS teaching committee
Council of the School of Biological Sciences
Herchel Smith Fund Management Committee
Chair Graduate School of Life Sciences

Peer Review Activities

I regularly review manuscripts for Nature, Nature Genetics, Nature Cell Biology, Developmental Cell, EMBO J, Genes & Development, Development, Cell Death & Differentiation.
I am a member of the BBSRC Grants Committee C and the review panel for Worldwide Cancer Research (formerly AICR). I am also a regular member of review panels for Science Foundation Ireland and the Finnish Academy of Science.

Editorial Board member for the following journals

Breast Cancer Research – Deputy Editor
Journal of Mammary Gland Biology and Neoplasia
Journal of Epithelial Biology and Pharmacology
JAK/STAT

Selected Invited Talks

2010: Garvin Institute, Sydney, Australia

XIth Reproductive Immunobiology conference, Palm Cove, Queensland, Australia

2011: The Jak/Stat pathway: 20 years from discovery to drugs, NIH, Bethesda, USA

Jak/Stat anniversary meeting, Frankfurt, Germany

2012: NYU Medical School, New York USA

Lactation Workshop, National Cancer Institute, Bethesda, USA

Gordon Research Conference on Cell Death, Lucca, Italy

ECDO 20th Euroconference on Apoptosis, Rome, Italy

2013: Keynote lecture, GRC conference on Mammary Gland Biology, Vermont, USA

Queens College, CUNY, New York, USA

Institut Curie, Paris, France

FEBS Jak/Stat meeting, Nottingham, UK

2014: GRC Conference on Cell Death, Vermont, USA

IABCR/National Breast Cancer Foundation Symposium, Sydney, Australia

Danish Cancer Center, Copenhagen, Denmark

2015: Keynote talk, European Network of Breast Development and Cancer Labs Workshop, Weggis, Switzerland

2016: Gordon Research Conference on Mammary Gland Biology, Lucca, Italy

Gordon Research Conference on Cell Death, Girona, Spain

IABCR conference, Portland, Oregon, USA

European Stem Cell Meeting, Cardiff

2017: University of Sussex

British Pharmacological Society Barcelona

Harvard Medical School

Lifecourse Biology Conference University of Sheffield

Jak/STAT meeting Cold Spring Harbor, USA

Postgraduate students supervised:

Katrina E Gordon	PhD awarded 1997
Ann P MacLaren	PhD awarded 1998
Ekaterini A. Kritikou	PhD awarded 2002
Ewan J.D. Robson	PhD awarded 2004
Paul J. Came	PhD awarded 2005
Waled Khaled	PhD awarded 2006
Paul G Tiffin	PhD awarded 2006
Peter Kreuzaler	PhD awarded 2010
Wenjing Li	PhD awarded 2010
Lisa Higginbotham	PhD awarded 2011
Carrie Oliver	PhD awarded 2011
Anna Staniszewska	PhD awarded 2011
Katherine Hughes	PhD awarded 2012
Hayley Frend	PhD awarded 2014
Henrike Resemann	PhD awarded 2015
Teresa Ho	PhD awarded 2015
Maximillian Blanck	PhD awarded 2016

Emily Erickson	MPhil awarded 2016
Matthew Wake	PhD awarded 2017
Robert Hume	PhD commenced 2013
Ala Alenazi	PhD commenced 2014
Olivia Harris	PhD commenced 2015

I regularly conduct PhD vivas both as an internal examiner and as external examiner in the UK and Australia.

Public Understanding of Science

I have been involved in PUS activities for many years. I participate annually in the Science Open Day at the University of Cambridge, where my lab provides exhibits and hands on activities for young children, teenagers and adults. I have participated in the Soapbox Science event on London's South Bank and gave a presentation at the British Science Festival in Bradford. I also give lay presentations to the general public and fundraisers. More recently, I have prepared hands-on activities for Reception/Year 1 primary school children in North Watford and Chesterton, Cambridge.

Current Grant Funding as PI

1. MRC project Grant Title : **Determining the role of macrophages and ageing in involution-associated tumourigenesis.** 2013-2016 £417,894
2. MRC Programme Grant Title : **Lysosomes – their role in mediating cell death** 2012-2017 £1.5 million
3. MRC project Grant Title : **The inflammatory microenvironment of the post-pregnancy mammary gland and its role in tumourigenesis.** 2016-2019 £524,301

Studentships and fellowships

NC3Rs PhD studentship 2013-2017
 Department of Pathology PhD studentship 2013-2017
 Wellcome Trust 4 year PhD Stem Cell programme 2015-2018
 Saudi Arabian Government PhD scholarship to Ala Alenazi 2014-2018

Previous grant funding as PI

1. BBSRC Project Grant Title : **The role of ROMA in lineage commitment** 2010-2013 £477,954
2. MRC Project Grant Title : **Inflammation and the tumour microenvironment in breast cancer: the role of Stat3 and NF-kappaB.** 2010-2013 £452,019
3. BBSRC Project Grant Title : **Engineering an in vitro model of the mammary gland** 2008-2010 £528,965
4. CRUK Pilot Grant Title : **Does constitutively active JAK2 perturb mammary gland development and lead to breast cancer?** 2009-2010 £46,844

5. Breast Cancer Campaign PhD studentship Title : **Lineage determining pathways and components in mammary stem cells and breast tumours**. 2008-2011 £106,279
6. Breast Cancer Campaign PhD studentship Title : **The role of caspases in mammary gland development and breast tumourigenesis**. 2008-2010 £93,507
7. BBSRC Project Grant Title : **Targeting distinct apoptotic pathways in mammary gland involution** 2006-2009 £233,000
8. BBSRC Research Development Fellowship Title : **Apoptosis and signalling in 3-dimensional cultures**. 2005-2008 £94,000
8. AICR Project Grant **The role of NF- κ B and NEMO in apoptosis, mammary gland development and tumourigenesis**. 2005-2008 £189,000
10. BBSRC Project Grant Title : **The genetic analysis of Jak/Stat signalling in *Drosophila melanogaster***. 2004 – 2007 £276,000
11. AICR – Project Grant Title : **The role of Stat3 isoforms in regulating apoptosis and tumourigenesis**. 2004 - 2007 £189,000
12. BBSRC Committee PhD studentship (competitively funded) Title : **Apoptosis during differentiation of embryonic stem cells** 2004-2007
13. Breast Cancer Campaign Project Grant Title : **Estrogen receptor and the mammary epithelial cell hierarchy**. 2006-2007 £108,423

Publications since 2005

1. Campbell JJ, Husmann A, Hume RD, Watson CJ, Cameron RE. (2017) Development of three-dimensional collagen scaffolds with controlled architecture for cell migration studies using breast cancer cell lines. *Biomaterials* Jan;114:34-43.
2. Davis, FM, Lloyd-Lewis B, Harris OB, Kozar S, Winton DJ and Watson CJ. (2016) Single-cell lineage tracing in the mammary gland reveals stochastic clonal dispersion of stem/progenitor cell progeny. *Nature Communications* 7 13053.
3. Ho TL, Guilbaud G, Blow JJ, Sale JE, and Watson CJ (2016) The KRAB Zinc Finger Protein Roma/Zfp157 Is a Critical Regulator of Cell-Cycle Progression and Genomic Stability. *Cell Reports* 15(4) 724-734.
4. Hughes K, Blanck M, Pensa S, and Watson CJ. (2016) Stat3 modulates chloride channel accessory protein expression in normal and neoplastic mammary tissue. *Cell Death and Disease* Oct 6;7(10):e2398.
5. Lloyd-Lewis B, Davis FM, Harris OB, Hitchcock JR, Lourenco FC, Pasche M and Watson CJ (2016) Imaging the mammary gland and mammary tumours in 3D: optical tissue clearing and immuno-fluorescence methods. *Breast Cancer Research* Dec13;18(1):127.

6. Khaled WT, Choon-Lee S, Stingl J, Chin X, Ali R, Rueda O, Hadi F, Wang J, Stratton M, Futreal PA, Jenkins N, Aparico S, Copeland N, Watson CJ, Caldas C and Liu P (2015) BCL11A is a triple negative breast cancer gene with critical functions in stem and progenitor cells. *Nature Comm.* Jan 9;6:5987.
7. Schuler F, Baumgartner F, Klepsch V, Chamson M, Müller-Holzner E, Watson CJ, Oh S, Hennighausen L, Tymoszyk P, Doppler W, Villunger A. (2015) The BH3-only protein BIM contributes to late-stage involution in the mouse mammary gland. *Cell Death Differ.* Jun5
8. Wake MS, Watson CJ. (2015) STAT3 the oncogene - still eluding therapy? *FEBS J.* Jul;282(14):2600-2611.
9. Sargeant, TJ, Lloyd-Lewis B, Resemann, HK, Skepper J, Watson CJ (2014) Stat3 regulates lysosomal membrane permeabilisation by uptake of milk fat globules to control cell death during mammary gland involution. *Nature Cell Biology*, Nov;16(11):1057-68.
10. Pensa S, Llowd-Lewis, B, Sargeant, TJ, Resemann HK, Kahn CR, Watson CJ. (2014) Stat3 and the PI3K regulatory subunits p55 α and p50 α regulate autophagy *in vivo*. *FEBS J.* Oct;281(20):4557-67.
11. Campbell JJ, Hume RD, Watson CJ. (2014) Engineering mammary gland in vitro models for cancer diagnostics and therapy. *Mol Pharm.* Jul 7;11(7):1971-81.
12. Pensa S, Neoh K, Resemann HK, Kreuzaler PA, Abell K, Clarke NJ, Reinheckel T, Kahn CR, Watson CJ. (2014) The PI3K regulatory subunits p55 α and p50 α regulate cell death *in vivo*. *Cell Death Differ.* Sep;21(9):1442-50.
13. Campbell JJ, Botos LA, Sargeant TJ, Davidenko N, Cameron RE, Watson CJ. (2014) A 3-D in vitro co-culture model of mammary gland involution. *Integr Biol (Camb)*. Jun;6(6): 618-26.
14. Resemann HK, Watson CJ, Lloyd-Lewis B. (2014) The Stat3 paradox: A killer and an oncogene. *Mol Cell Endocrinol.* Jan 25;382(1):603-11.
15. Oliver CH, Nichols J, Watson CJ. (2013) The KRAB domain zinc finger protein, Zfp157, is expressed in multiple tissues during mouse embryogenesis and in specific cells in adult mammary gland and skin. *Genesis* Jan 12:1-8.
16. Oliver CH, Watson CJ. (2013) Making milk: A new link between STAT5 and Akt1. *JAKSTAT* Apr 1;2(2):e23228.
17. Faupel-Badger JM, Arcaro KF, Balkam JJ, Eliassen AH, Hassiotou F, Lebrilla CB, Michels KB, Palmer JR, Schedin P, Stuebe AM, Watson CJ, Sherman ME. (2013) Postpartum remodeling, lactation, and breast cancer risk: summary of a National Cancer Institute-sponsored workshop. *J Natl Cancer Inst.* Feb 6;105(3):166-74.
18. Frend HT, Watson CJ. (2013) Elf5 - breast cancer's little helper. *Breast Cancer Res.* Mar27;15(2):307.
19. Prater M, Shehata M, Watson CJ, Stingl J. (2013) Enzymatic dissociation, flow cytometric analysis, and culture of normal mouse mammary tissue. *Methods Mol Biol.* 2013;946:395-409.

20. Staniszewska AD, Pensa S, Caffarel MM, Anderson LH, Poli V, Watson CJ. (2012) Stat3 is required to maintain the full differentiation potential of mammary stem cells and the proliferative potential of mammary luminal progenitors. *PLoS One* 7(12):e52608.
21. Oliver, C.H., Khaled, W.T., Frend, H.T., Nichols, J. And Watson, C.J. (2012) The Stat6 regulated KRAB domain zinc finger protein Zfp157 regulates the balance of lineages in mammary gland and compensates for loss of Gata-3 (2012) *Genes & Development*. May 15;26(10):1086-97.
22. Kreuzaler, P.A and Watson, C.J. (2012) Killing a cancer, what are the alternatives? *Nature Reviews Cancer*. May 11, 12, 411-424.
23. Smalley MJ, Kendrick H, Sheridan JM, Regan JL, Prater MD, Lindeman GJ, Watson CJ, Visvader JE, Stingl J. (2012) Isolation of Mouse Mammary Epithelial Subpopulations: A Comparison of Leading Methods. *J Mammary Gland Biol Neoplasia*. Jun;17(2):91-7.
24. Hughes K, Watson CJ. (2012) The spectrum of STAT functions in mammary gland development. *JAKSTAT* Jul 1;1(3):151-158.
25. Hughes K, Wickenden JA, Allen JE, Watson CJ. (2012) Conditional deletion of Stat3 in mammary epithelium impairs the acute phase response and modulates immune cell numbers during post-lactational regression. *J Pathol*. May;227(1):106-17.
26. Shehata M, Teschendorff A, Sharp G, Novcic N, Russell IA, Avril S, Prater M, Eirew P, Caldas C, Watson CJ, and Stingl, J. (2012) Phenotypic and functional characterisation of the luminal cell hierarchy of the mammary gland. *Breast Cancer Res*. Oct 22;14(5):R134.
27. Davidenko N, Gibb T, Schuster C, Best SM, Campbell JJ, Watson CJ, Cameron RE. (2012) Biomimetic collagen scaffolds with anisotropic pore architecture. *Acta Biomater*. Feb;8(2): 667-76.
28. Caffarel MM, Zaragoza R, Pensa S, Li J, Green AR, Watson CJ. (2012) Constitutive activation of JAK2 in mammary epithelium elevates Stat5 signalling, promotes alveologenesis and resistance to cell death, and contributes to tumourigenesis. *Cell Death Differ*. Mar;19(3): 511-22
29. Kreuzaler, P.A., Staniszewska, A.D., Li, W., Omidvar, N., Kedjouar, B., Turkson, J., Poli, V., Flavell, R.A., Clarkson, R.W.E. and Watson, C.J. (2011) Stat3 controls lysosomal mediated cell death *in vivo*. *Nature Cell Biology* Mar;13(3):303-9.
30. Watson CJ, Kreuzaler PA. (2011) Remodelling mechanisms of the mammary gland during involution. *Int J Dev Biol*. 2011;55(7-8-9):757-762
31. Campbell JJ, Davidenko N, Caffarel MM, Cameron RE, Watson CJ. (2011) A multi-functional 3D co-culture system for studies of mammary tissue morphogenesis and stem cell biology. *PLoS One*. 6(9):e25661.
32. Anderson, L., Boulaanger, C., Smith, G., Carmeliet, P. and Watson, C.J. (2011) Stem cell marker Prominin-1 regulates branching morphogenesis, but not regenerative capacity, in the mammary gland. *Developmental Dynamics* Mar;240(3):674-81.

33. Khaled, W., Oliver, C.H. and Watson, C.J. (2011) Immune cell regulators in mammary gland. *J. Repro. Immunol.* Mar;88(2):124-9.
34. Demaria M, Giorgi C, Lebedzinska M, Esposito G, D'Angeli L, Bartoli A, Gough DJ, Turkson J, Levy DE, Watson CJ, Wieckowski MR, Provero P, Pinton P, Poli V. A (2010) STAT3-mediated metabolic switch is involved in tumour transformation and STAT3 addiction. *Aging (Albany NY)*. Nov;2(11):823-42.
35. Davidenko N, Campbell JJ, Thian ES, Watson CJ, Cameron RE (2010) Collagen-Hyaluronic Acid Scaffolds for Adipose Tissue Engineering. *Acta Biomater.* 6(10):3957-68.
36. Wickenden JA and Watson CJ (2010) Signalling downstream of PI3 kinase in mammary epithelium: a play in 3 Akts. *Breast Cancer Res.* 12(2):202-211.
37. Hynes NE and Watson CJ (2010) Mammary gland growth factors: Roles in normal development and breast cancer. *Cold Spring Harb Perspect Biol* 2(8):a003186.
38. Barbieri I, Pensa S, Pannellini T, Quagliano E, Maritano D, Demaria M, Voster A, Turkson J, Cavallo F, Watson CJ, Provero P, Musiani P, Poli V. (2010) Constitutively active Stat3 enhances neu-mediated migration and metastasis in mammary tumors via upregulation of Cten. *Cancer Res.* 70(6):2558-67.
39. Avril-Sassen S, Goldstein LD, Stingl J, Blenkiron C, Le Quesne J, Spiteri I, Karagavrilidou K, Watson CJ, Tavaré S, Miska EA, Caldas C. (2009) Characterisation of microRNA expression in post-natal mouse mammary gland development. *BMC Genomics* 10:548-563.
40. Campbell JJ, Watson CJ. (2009) Three-dimensional culture models of mammary gland. *Organogenesis* 5(2):43-9.
41. Li W, Rich T, Watson CJ. (2009) PML: a tumor suppressor that regulates cell fate in mammary gland. *Cell Cycle* 8(17):2711-7.
42. Watson CJ, Kreuzaler PA. (2009) The role of cathepsins in involution and breast cancer. *J Mammary Gland Biol Neoplasia.* 14(2):171-9.
43. Li W, Ferguson BJ, Khaled WT, Tevendale M, Stingl J, Poli V, Rich T, Salomoni P, Watson CJ. (2009) PML depletion disrupts normal mammary gland development and skews the composition of the mammary luminal cell progenitor pool. *Proc Natl Acad Sci U S A.* 106(12):4725-30.
44. Pensa S, Watson CJ and Poli V (2009) Stat3 and the Inflammation/Acute Phase Response in Involution and Breast Cancer. *J Mammary Gland Biol Neoplasia.* 14(2):121-9.
45. Watson CJ (2009) Immune cell regulators in mouse mammary development and involution. *J Anim Sci.* 87(13 Suppl):35-42.
46. Tiffen PG, Omidvar N, Marquez-Almuina N, Croston D, Watson CJ, Clarkson RW. (2008) A dual role for oncostatin M signaling in the differentiation and death of mammary epithelial cells in vivo. *Mol Endocrinol.* 22(12):2677-88.

47. Watson, C.J. and Khaled, W.T (2008) Mammary development in the embryo and adult: a journey of morphogenesis and commitment. *Development* 134(15), 2739-2750.
48. Khaled WT, Read EK, Nicholson SE, Baxter FO, Brennan AJ, Came PJ, Sprigg N, McKenzie AN, Watson CJ. (2007) The IL-4/IL-13/Stat6 signalling pathway promotes luminal mammary epithelial cell development. *Development* Aug;134(15):2739-50.
49. Matthews JR, Watson SM, Tevendale MC, Watson CJ, Clarke AR. (2007) Caspase-dependent proteolytic cleavage of STAT3alpha in ES cells, in mammary glands undergoing forced involution and in breast cancer cell lines. *BMC Cancer*. Feb 12;7:29.
50. Watson CJ. (2006) Post-lactational mammary gland regression: molecular basis and implications for breast cancer. *Expert Rev Mol Med*. Dec 20;8(32):1-15.
51. Sutherland KD, Vaillant F, Alexander WS, Wintermantel TM, Forrest NC, Holroyd SL, McManus EJ, Schutz G, Watson CJ, Chodosh LA, Lindeman GJ, Visvader JE. (2006) c-myc as a mediator of accelerated apoptosis and involution in mammary glands lacking Socs3. *EMBO J*. Dec 13;25(24):5805-15.
52. Baxter FO, Came PJ, Abell K, Kedjouar B, Huth M, Rajewsky K, Pasparakis M, Watson CJ. (2006) IKKbeta/2 induces TWEAK and apoptosis in mammary epithelial cells. *Development*. Sep;133(17):3485-3494.
53. Robson EJ, Khaled WT, Abell K, Watson CJ. (2006) Epithelial-to-mesenchymal transition confers resistance to apoptosis in three murine mammary epithelial cell lines. *Differentiation*. Jun;74(5):254-64.
54. Clarkson RW, Boland MP, Kritikou EA, Lee JM, Freeman TC, Tiffen PG, Watson CJ. (2006) The genes induced by signal transducer and activators of transcription (STAT)3 and STAT5 in mammary epithelial cells define the roles of these STATs in mammary development. *Mol Endocrinol*. Mar;20(3):675-85.
55. Abell K, Bilancio A, Clarkson RW, Tiffen PG, Altaparmakov AI, Burdon TG, Asano T, Vanhaesebroeck B, Watson CJ. (2005) Stat3-induced apoptosis requires a molecular switch in PI(3)K subunit composition. *Nature Cell Biol*. 7, 392-398.

Referees

The following are experts in my research field:

Professor Pamela Cowin PhD
Departments of Dermatology and Cell Biology
NYU Langone Medical Centre
New York University Medical School
550 First Avenue
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Professor Jeffrey M Rosen PhD
C.C. Bell Professor of Molecular and Cellular Biology
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Baylor College of Medicine
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The following is my Head of House:

Professor Dame Carol Black FRCP FMedSci
The Principal
Newnham College
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Cambridge, CB3 9DF

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The following is a university colleague who can comment on my administrative roles:

Professor Anne Ferguson-Smith FRS FMedSci
Arthur Balfour Professor of Genetics
Head of Department of Genetics
University of Cambridge
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