1. Personal Details

NAME	Angus Smith Macdonald
ADDRESS	Department of Actuarial Mathematics and Statistics
	Heriot-Watt University, Edinburgh EH14 4AS
	Tel: 0131 451 3209, Fax: 0131 451 3249, email: A.S.Macdonald@hw.ac.uk
EDUCATION	1981 BSc in Mathematics (First Class), University of Glasgow
	1984 Fellow of the Faculty of Actuaries (FFA)
	1995 PhD in Actuarial Science, Heriot-Watt University
EMPLOYMENT	Scottish Amicable Life Assurance Society
	1981–84 Actuarial student, 1984–89 Actuary
	Department of Actuarial Mathematics & Statistics, Heriot-Watt University
	1989–1997 Lecturer, 1997–2000 Senior Lecturer, 2000– Professor

2. Selected Administration

1999–	Director, Genetics and Insurance Research Centre
2003–2007	Director of Research, School of Mathematical and Computer Sciences
2005–2007	Director, the Maxwell Institute for Mathematical Sciences
2007–2013	Head of Department of Actuarial Mathematics & Statistics
2013–	Chair, Ordinances and Regulations Committee

3. Selected Professional Activities

1993–1998	Scientific Committee, 1998 International Congress of Actuaries
1996–1997	Scientific Committee, 7th AFIR Colloquium, Cairns, Australia
1998–2007	Elected to Council of the Faculty of Actuaries (Honorary Librarian)
2002–2011	Chairman, Mortality Sub-Committee (later, Life Office Mortality Committee) of the CMI
2002–2004	Scientific Committee, 35th ASTIN Colloquium, Bergen, Norway
2008–2009	Scientific Committee, 3rd IAA Life Colloquium, Munich, Germany
2009–2011	Member, Monitoring Group on Genetics and Insurance of the Human Genetics Commission
2011–2013	Chairman, Technical Committee of the CMI

4. Ph.D. Supervision (* co-supervised, † Ph.D. by publication)

1998: A. Berketi	2000: N. Katrakis
2002: D.J. Pritchard, C.T. Wekwete*	2003: E.H. Gui
2004: M. Willder*, W. Tong*	2006: C. Espinosa-Castaneda, L. Lu*.
2007: K. Zhang*, O.B. Akodu, P. Tapadar, B. Lu*	2008: T. Chatterjee*, K.R. McIvor
2009: L. MacCalman	2010: F. Yu
2012: S.J. Richards*†	2014: C.J. Adams*
2019: F. Ungolo*	2020: O. Haçarız*

5. Prizes and Honours

1998	Honorable Mention, James C.H. Anderson Memorial Award
2005	David Garrick Halmstad Prize (with H.R. Waters and C.T. Wekwete)
2005	Best Paper Prize, North American Actuarial Journal (with H.R. Waters and C.T. Wekwete)
2005	Elected honorary member, Actuarial Society of South Africa
2006	Elected Fellow of the Royal Society of Edinburgh (FRSE)
2011	Finlaison Medal of the Institute and Faculty of Actuaries

6. Editorial Work

(1) Ed., Scand. Act. J. 2000–06. (2) Ed., Ann. Act. Sci. 2008–17. (3) Ed.-in-Ch., Ann. Act. Aci. 2018–. (4) Assoc. Ed., South African Act. J. 2000–2017; Law, Probability and Risk 2002–2011. (5) Section Ed., Encyclopaedia of Actuarial Science, John Wiley, 2001–2004. (6) Series Ed., CUP International Series on Actuarial Science, 2008–.

7. Research Grants over £10,000 (PI or Joint PI)

1997	£37,800	Standard Life Assurance Company, PhD project, modelling LTC Insurance.
1998	£33,840	Swiss Re Life and Health, breast/ovarian cancer and CHD genetic risks.
1999	£36,100	Swiss Re Life and Health, for continuation of the project above.
1999	£328,500	Association of British Insurers, to set up Genetics and Insurance Research Centre.
2000	£37,800	Swiss Re Life and Health, for continuation of the project above.
2001	£50,455	Standard Life Assurance Company, PhD project, life insurance solvency.
2002	£74,002	Wellcome Trust, adverse selection based on genetic tests (with U. Cardiff)).
2003	£350,335	Association of British Insurers, to continue Genetics and Insurance Research Centre.
2003	£66,329	Wellcome Trust, future need for long-term care (with U. Newcastle & MRC CFAS).
2005	£44,899	Faculty of Actuaries, healthy life expectancy in Scotland (with U. Aberdeen).

8. Book

ANGUS S. MACDONALD, STEPHEN J. RICHARDS & IAIN D. CURRIE (2018). *Modelling Mortality with Actuarial Applications.* Cambridge University Press, Cambridge, U.K..

9. Selected Publications

MACDONALD, A.S. (1996). An actuarial survey of statistical models for decrement and transition data. I: Multiple state, binomial and Poisson models. *BAJ* **2**, 129–155.

MACDONALD, A.S. (1996). An actuarial survey of statistical models for decrement and transition data. II: Competing risks, non-parametric and regression models. *BAJ* **2**, 429–448.

MACDONALD, A.S. (1996). An actuarial survey of statistical models for decrement and transition data. III: Counting process models. *BAJ* **2**, 703–726.

MACDONALD, A.S. (1997). How will improved forecasts of individual lifetimes affect underwriting?. *Phil. Trans. Roy. Soc. B* **352**, 1067–1075 and (with discussion) *BAJ* **3** 1009–1025.

MACDONALD, A.S. (1999). Modeling the impact of genetics on insurance. *NAAJ* **3:1**, 83–101.

MACDONALD, A.S. & PRITCHARD, D.J. (2000). A mathematical model of Alzheimer's disease and the ApoE gene. *ASTIN Bulletin* **30**, 69–110.

MACDONALD, A.S. & PRITCHARD, D.J. (2001). Genetics, Alzheimer's disease and long-term care insurance. *NAAJ* **5:2**, 54–78.

GUI, E.H. & MACDONALD, A.S. (2001). A Nelson-Aalen estimate of the incidence rates of early-onset Alzheimer's disease associated with the Presenilin-1 gene. *ASTIN Bulletin* **32**, 1–42.

GUTIÉRREZ, M.C. & MACDONALD, A.S. (2003). Adult polycystic kidney disease and critical illness insurance. *NAAJ* **7:2**, 93–115.

MACDONALD, A.S., WATERS, H.R. & WEKWETE, C.T. (2003). The genetics of breast and ovarian cancer. I: A model of family history. *Scand. Act. J.* **2003**, 1–27.

MACDONALD, A.S., WATERS, H.R. & WEKWETE, C.T. (2003). The genetics of breast and ovarian cancer. II: A model of critical illness insurance. *Scand. Act. J.* **2003**, 28–50.

MACDONALD, A.S. (2003). Moratoria on the use of genetic tests and family history for mortgage-related life insurance. *BAJ* **9**, 217–237.

GUTIÉRREZ, M.C. & MACDONALD, A.S. (2004). Huntington's disease, critical illness insurance and life insurance. *Scand. Act. J.* **2004**, 279–313.

MACDONALD, A.S., WATERS, H.R. & WEKWETE, C.T. (2005). A model for coronary heart disease and stroke, with applications to critical illness insurance underwriting I: The model. *NAAJ* **9:1**, 13–40.

MACDONALD, A.S., WATERS, H.R. & WEKWETE, C.T. (2005). A model for coronary heart disease and stroke, with applications to critical illness insurance underwriting II: Applications. *NAAJ* **9:1**, 41–56.

MACDONALD, A.S., PRITCHARD, D.J. & TAPADAR, P. (2006). The impact of multifactorial genetic disorders on critical illness insurance: A simulation study based on UK Biobank. *ASTIN Bulletin* **36**, 311–346.

GUI, E.H., LU, B., MACDONALD, A.S., WATERS, H.R. & WEKWETE, C.T. (2006). The genetics of breast and ovarian cancer III: A new model of family history with applications. *Scand. Act. J.* **2006**, 338–367.

MACDONALD, A.S. & MCIVOR, K.R. (2006). Application of a polygenic model of breast and ovarian cancer to critical illness insurance. *Ann. Act. Sci.* **1**, 319–343.

GUTIÉRREZ, M.C. & MACDONALD, A.S. (2007). Adult polycystic kidney disease and insurance: A case study in genetic heterogeneity. *NAAJ* **11:1**, 90–118.

ESPINOSA, C. & MACDONALD, A.S. (2007). A correction for ascertainment bias in estimating rates of onset of highly penetrant genetic disorders. *ASTIN Bulletin* **37**, 429–452.

LU, L., MACDONALD, A.S., WATERS, H.R. & YU, F. (2007). A dynamic family history model of hereditary nonpolyposis colorectal cancer and critical illness insurance. *Ann. Act. Sci.* **2**, 289–325.

LU, L., MACDONALD, A.S. & WEKWETE, C.T. (2008). Premium rates based on genetic studies: How reliable are they?. *Insurance: Mathematics & Economics* **42**, 319–331.

LU, L., MACDONALD, A.S. & WATERS, H.R. (2008). Sampling distributions of critical illness insurance premium rates: Breast and ovarian cancer. *ASTIN Bulletin* **38**, 527–542.

MITCHELL, R.J., FERGUSON, R.K., MACDONALD, A.S., DUNLOP, M.G., CAMPBELL, H. & PORTEOUS, M.E. (2008). Cascade genetic testing for mismatch repair gene mutations. *Familial Cancer* **7**, 293–301.

CHATTERJEE, T., MACDONALD, A.S. & WATERS, H.R. (2008). A model for ischaemic heart disease and stroke I: The model. *Ann. Act. Sci.* **3**, 45–81.

CHATTERJEE, T., MACDONALD, A.S. & WATERS, H.R. (2008). A model for ischaemic heart disease and stroke II: Modelling obesity. *Ann. Act. Sci.* **3**, 83–103.

CHATTERJEE, T., MACDONALD, A.S. & WATERS, H.R. (2008). A model for ischaemic heart disease and stroke III: Applications. *Ann. Act. Sci.* **3**, 105–119.

MACDONALD, A.S. & MCIVOR, K. (2009). Modelling adverse selection in the presence of a common genetic disorder: The breast cancer polygene. *ASTIN Bulletin* **39**, 373–402.

MACDONALD, A.S. & MCIVOR, K.R. (2010). Pensions and genetics: Can longevity genes be reliable risk factors for annuity pricing?. *Scand. Act. J.* **2010**, 1–14.

MACDONALD, A.S. (2010). Survival analysis on pedigrees: A marked point process model. *ASTIN Bulletin* **40**, 35–64.

MACDONALD, A.S. & TAPADAR, P. (2010). Multifactorial genetic disorders and adverse selection: Epidemiology meets economics. *Journal of Risk and Insurance* **77(1)**, 155–182.

LU, B., MACDONALD, A.S. & WATERS, H.R. (2011). The genetics of breast and ovarian cancer IV: A model of breast cancer progression. *Scand. Act. J.* **2011**, 239–266.

LU, B., MACDONALD, A.S., WATERS, H.R. & YU, F. (2011). The genetics of breast and ovarian cancer V: Application to income protection insurance. *Scand. Act. J.* **2011**, 267–291.

MACDONALD, A.S. & YU, F. (2011). The impact of genetics on insurance: Conclusions from the 'bottom-up' modelling programme. *ASTIN Bulletin* **41**, 343–376.

JOLY, Y., BURTON, H., KNOPPERS, B.M., FEZE, I.N., DENT, T., PASHAYAN, N., CHOWDHURY, S., FOULKES, W., HALL, A., HAMET, P., KIRWAN, N., MACDONALD, A., SIMARD, J. & VAN HOYWEGHEN, I. (2014). Life insurance: Genomic stratification and risk classification. *European J. Hum. Gen.* **22(5)**, 575–579.

ADAMS, C.J., DONNELLY, C.A. & MACDONALD, A.S. (2015). The impact of known breast cancer polygenes on critical illness insurance. *Scand. Act. J.* **2015**, 141–171.

ADAMS, C.J., DONNELLY, C.A. & MACDONALD, A.S. (2015). Adverse selection in a start-up long-term care insurance market (with discussion). *BAJ* **20**, 298–365.

HAO, M., MACDONALD, A.S., TAPADAR, P. & THOMAS, R.G. (2016). Insurance loss coverage under restricted risk classification: The case of iso-elastic demand. *ASTIN Bulletin* **46**, 265–291.

HAO, M., MACDONALD, A.S., TAPADAR, P. & THOMAS, R.G. (2018). Insurance loss coverage and demand elasticities. *Insurance: Mathematics & Economics* **79**, 15–25.

HAO, M., MACDONALD, A.S., TAPADAR, P. & THOMAS, R.G. (2019). Insurance loss coverage and social welfare. *Scand. Act. J.* **2019**, 113–128.

UNGOLO, F., CHRISTIANSEN, M., KLEINOW, T. & MACDONALD, A.S. (2019). Survival analysis of pension scheme mortality when data are missing. *Scand. Act. J.* **2019**, 523–547.

UNGOLO, F., KLEINOW, T. & MACDONALD, A.S. (2020). A hierarchical model for the joint mortality analysis of pension scheme data with missing covariates. *Insurance: Mathematics & Economics* **91**, 68–84.