

William Cawthorn, Ph.D

Address	1/1 Esdaile Park, Edinburgh, EH9 2PS, United Kingdom		
Telephone (work)	(+44) 131 242 6691	Telephone (mobile)	(+44) 7737 562125
Email	W.Cawthorn@ed.ac.uk	Nationality	British
ORCID	0000-0001-7832-5057	Date of Birth	7 June 1982

RESEARCH SUMMARY

My research addresses the interplay between metabolism, immunological function and skeletal health in the context of both fundamental biology and chronic diseases. To do so I combine preclinical animal models, human clinical studies and data science approaches using the UK Biobank. Methods include the development of new biomedical imaging techniques and artificial intelligence to open new avenues for population-level studies. My key research interests are as follows:

A) Bone marrow adipose tissue (BMAT):

My overarching research goal is to determine the function of BMAT and its impact on human health. BMAT comprises >10% of total adipose mass in lean, healthy humans, and further increases in diverse clinical contexts. In striking contrast to white adipose tissue (WAT) and brown adipose tissue (BAT), BMAT accumulates during caloric restriction (CR), a condition that promotes healthy ageing by preventing and treating chronic diseases. Thus, altered BMAT formation and/or function might impact numerous human diseases. However, the physiological and pathological functions of BMAT were previously almost completely unknown.

In 2015 I was awarded an MRC Career Development Award to investigate the metabolic and endocrine functions of BMAT. One barrier to understanding BMAT formation and function has been the inability to measure BMAT on a population-level. To address this, in 2019 I was awarded an MRC Research Grant to develop new deep-learning methods for high-throughput, automated analysis of BMAT in the UK Biobank imaging study. My key achievements are as follows:

1. Discovered that, during states of caloric restriction (CR), BMAT is a key source of adiponectin, a hormone implicated with improved cardiometabolic health ([Cawthorn *et al*, Cell Metabolism 2014](#)).
2. Identified glucocorticoids as drivers of BMAT accumulation during CR ([Cawthorn *et al*, Endocrinology 2016](#) and [Lovdel *et al*, Endocrine Abstracts 2018](#)), highlighting mechanisms through which nutritional status regulates BMAT formation.
3. Developed new biomedical imaging methods to investigate BMAT function *in vivo*, both preclinically and in humans. This research, which has yielded new research datasets ([GSE138690](#)) and software code ([ROCPixel](#)), revealed that BMAT has high basal glucose uptake and is metabolically distinct from WAT and BAT; thus, BMAT represents a third major, distinct adipose tissue subtype ([Suchacki *et al*, Nature Communications 2020](#)).
4. Developed deep learning to automate BMAT analysis from MRI data in the UK Biobank (presented at [ISMRM 2021](#), [BMA2022](#) and [ISBM2022](#); [preprint on medRxiv](#)).

Moreover, in 2017 I worked as key member of an international, multidisciplinary team of researchers to cofound The International Bone Marrow Adiposity Society (BMAS; <http://bma-society.org/>), of which I am the inaugural Secretary and am currently acting as interim President. I edited the [first special issue on BMAT](#) for *Frontiers in Endocrinology*; lead the BMAS Nomenclature Working Group, with corresponding authorship on our first BMAS position paper ([Bravenboer *et al*, Frontiers in Endocrinology 2020](#)); and serve on of the BMAS Biobanking Working Group, co-authoring our recently published biobanking guidelines for BMAT research ([Lucas *et al*, Frontiers in Endocrinology 2021](#)).

Since 2015 my BMAT research has contributed to 23 peer-reviewed publications, 33 invited seminars, 30 conference abstracts, 2 PhD theses and 1 book chapter.

B) Adiponectin function in caloric restriction

My finding that BMAT is a key source of adiponectin raises a key question: what is adiponectin's function during CR? Thus, **another of my major research interests is to elucidate adiponectin's**

contribution to the metabolic and immunological benefits of CR. I have pursued this goal through preclinical studies in adiponectin knockout (KO) mice, and through Mendelian Randomisation using the UK Biobank. Key advances are as follows:

1. Discovered that, unexpectedly, adiponectin KO *enhances* the metabolic benefits of CR ([Sulston PhD Thesis](#)) and alters CR's immunological effects ([Mattiucci PhD thesis](#)).
2. Mendelian Randomisation revealed that decreased circulating adiponectin may influence immunological function in humans, including the risk of adverse COVID-19 outcomes (*unpublished studies in progress*).

Since 2015 my adiponectin research has contributed to 27 invited seminars, 12 conference abstracts, and 2 PhD theses.

C) Sex differences in the effects of caloric restriction

My BMAT and adiponectin research has identified age-dependent sex differences in the CR response, with young females resisting many of CR's health benefits. For example, in male mice CR decreases fat mass, improves glucose tolerance and suppresses haematopoiesis, whereas females resist these effects. These differences no longer occur in aged mice, in which CR elicits similar metabolic benefits in both sexes. Notably, my research has revealed similar age-dependent sex differences during CR in humans. These findings are reported in our [2023 eLife paper](#) and available as open datasets (University of Edinburgh [DataShare](#), and [GSE230402](#)).

To further investigate the basis and extent of these sex differences I have been awarded two research grants (one as PI, one as Co-Investigator) and am the principal supervisor for a final-year PhD student who is contributing to this research. *Since 2015 this research has contributed to 4 peer-reviewed publications, 25 invited seminars, 2 PhD theses, and 18 abstracts at local, national and international meetings. They are the basis for three ongoing interdisciplinary collaborations.*

Finally, I am a strong advocate for open research and research integrity, including representing the University of Edinburgh as an Open Science Ambassador for the League of European Research Universities (LERU), and as the University's representative for the UK Reproducibility Network (UKRN). Through these roles I have contributed to [position papers](#) and [online resources](#) relevant to research openness and integrity.

ACADEMIC APPOINTMENTS

08/2022-present	Senior Lecturer (Associate Professor), Centre for Cardiovascular Science (CVS), University of Edinburgh
06/2020-07/2022	Lecturer (Assistant Professor), Centre for Cardiovascular Science (CVS), University of Edinburgh
01/2015-05/2020	Chancellor's Fellow, CVS, University of Edinburgh

EDUCATION AND TRAINING

2009-2014	University of Michigan, USA. Postdoctoral training, Department of Molecular and Integrative Physiology. Mentor: Prof. Ormond MacDougald	
2000-2008	Clare College, University of Cambridge	
2004-2008	PhD research on " <i>The Molecular Mechanisms of Anti-Adipogenesis by Tumour Necrosis Factor-α</i> " in the Department of Clinical Biochemistry and Institute of Metabolic Science. Research Supervisor: Dr. Jaswinder Sethi	
2000-2004	BA Hons and MSci Hons (First Class) in Natural Sciences (Biochemistry)	
1995-2000	Bedford School	
2000	A-levels	Chemistry (A) Biology (A) Mathematics (A)
1998	GCSEs	6 at grade A*, 4 at grade A

RESEARCH EXPERIENCE

- 2015- **Principal Investigator, CVS, University of Edinburgh**
PI for studies investigating BMAT, including the causes and consequences of BMAT expansion during caloric restriction (CR), the impact of BMAT on metabolic homeostasis, characterisation of BMAT from human donors, and population-level studies of BMAT using machine learning in the UK Biobank. Other key lines of research include investigating sex differences and the role of adiponectin in the metabolic, cardiovascular and immunological effects of CR and ageing.
- 2009-2014 **Department of Molecular and Integrative Physiology, University of Michigan**
Postdoctoral research into: (1) The effects of Wnt signalling on mesenchymal stem cell fate, mature adipocyte biology, whole-organism metabolism and energy homeostasis; (2) Identifying novel regulators of adipogenesis and adipocyte biology; (3) Adipose tissue-derived stem cells; and (4) Functional analysis of BMAT.
- 2004-2008 **Department of Clinical Biochemistry and Institute of Metabolic Science, University of Cambridge**
PhD investigating effects of tumour necrosis factor-alpha (TNF- α) on adipose tissue in the context of diseases such as obesity and type 2 diabetes. Identified a novel pathway of TNF- α -induced inhibition of adipocyte differentiation, involving the transcriptional regulators β -catenin and TCF7L2. Also investigated mechanisms linking inflammation to the pathogenesis of insulin resistance; modulation of Wnt signalling in adipose tissue during obesity; and dysregulation of mature adipocyte function by TNF- α .
- 2003 **Department of Biochemistry, University of Cambridge**
Eight-week project in Dr. Peter Leadlay's lab involving the engineering of enzymes (PPTases) for synthesis of antibiotics. Work involved protein purification, molecular biology and a bioinformatics investigation of PPTase genes in several bacterial species, leading to acknowledgement in a subsequent publication.
- 2002 **Department of Physiology, University of Cambridge**
Awarded a grant from the Durham Fund to work for 8-weeks in Dr. Bill Colledge's lab, using molecular biology and cell culture as a basis for generating transgenic mice with a targeted mutation in the *Ryr2* gene (Ryanodine receptor 2).
- 1999 **Thomas Jefferson University Hospital, Philadelphia, USA**
Organized a summer placement in Medical Genetics Department. Practical work involved gene testing, karyotyping and generating familial cancer histories. Aided data collection and attended meetings for discussion of cancer research.

RESEARCH FUNDING

- 2023 - Small Research Grant, The Royal Society of Edinburgh
- 2019 - Research Grant, Institutional Strategic Support Fund (ISSF), Wellcome Trust
- 2019-2022 - Research Grant, Medical Research Council
- 2018 - Research Incentive Grant, Carnegie Trust
- Practical Skills Grant, The Society for Endocrinology
- 2016 - Research Grant, Institutional Strategic Support Fund (ISSF), Wellcome Trust
- Bioinformatics Grant, BHF Centre of Research Excellence
- 2015-2020 - Chancellor's Fellowship, University of Edinburgh
- 2015-2022 - Career Development Award, Medical Research Council
- 2015 - Marie Curie Fellowship, European Commission (*declined in favour of Medical Research Council Career Development Award*)
- 2012 - Lilly Innovation Fellowship Award, Eli Lilly
- Ruth L. Kirschstein National Research Service Award for Individual Postdoctoral Fellows, National Institutes of Health (*offer declined for Eli Lilly Fellowship*)
- 2009-2012 - Research Fellowship, Royal Commission for the Exhibition of 1851 (UK)
- 2004-2007 - Research Studentship, Medical Research Council (UK)

HONOURS AND AWARDS

- 2022 - Open Research Award, University of Edinburgh
 - 2016-2017 - Head of College Award, University of Edinburgh
 - 2013 - Outstanding Abstract Award for ENDO 2013 conference, Endocrine Society
 - 2012-2013 - Elected President of the Postdoctoral Society of the Department of Molecular and Integrative Physiology, University of Michigan
 - 2010 - FEBS Letters' 'Most Cited Paper of 2008-2010' Award (*currently >700 citations*)
 - 2008 - FEBS Letters' 'Most Cited Paper of 2008' Award
 - 2007 - Best Presentation, Rank Prize Funds Mini-Symposium on Adiposity
 - Arthritis National Research Foundation Travel Award to attend the 11th International TNF Superfamily Conference at Asilomar, California
 - 2006 - Prize for Best Presentation, 2006 Clinical School Graduate Symposium
 - Grant from the Chibnall Travel Fund, Clare College, University of Cambridge
 - 2004 - Chibnall Prize for Biochemistry, Clare College, University of Cambridge
 - 2002 - Foundation Scholarship, Clare College, University of Cambridge
 - 2001 - One-Year Scholarship, Clare College, University of Cambridge
 - 1996-2000 - Four Gold Awards, UK Mathematical Challenge
 - Silver Medals, UK Biology and Chemistry Olympiads
 - Talalay Science Prize, Bedford School
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OTHER POSITIONS AND PROFESSIONAL MEMBERSHIPS

- 2022 Interim President, International Bone Marrow Adiposity Society (BMAS)
- 2021- Open Science Ambassador for the University of Edinburgh (representing the University for LERU, the League of European Research Universities)
- 2021- University of Edinburgh representative for the UK Reproducibility Network
- 2021- Member, CVS Teaching Committee
- 2021- Member, CVS Student Experience Committee
- 2021- Member, Association for the Study of Obesity (ASO) – Scotland Committee
- 2020-2021 Member of the University of Edinburgh Working Group on Research Metrics
- 2020- Member, International Society for Bone Morphometry
- 2019-2021 Member, American Society for Bone and Mineral Research
- 2018-2023 Editorial Board Member, Diabetes
- 2017- Secretary and founding member, International Bone Marrow Adiposity Society (BMAS)
- 2016-2017 Editor, *Frontiers in Endocrinology* special issue on Bone marrow adipose tissue
- 2016- Member, Bone Research Society (UK)
- 2015- Member, CVS Public Engagement Committee. Co-coordinator of CVS Twitter account (@EdinUniCVS) and @EdinUniMetabol for public outreach and communication.
- 2015- Review Editor, *Frontiers in Endocrinology* and *Frontiers in Genetics*
- 2015- Member, The Society for Endocrinology
- 2015-2019 Member, CVS Seminars Committee and Communications and Social Committee.
- 2015-2017 Coordinator, CVS weekly student and postdoc seminar series.
- 2012-2014 Member, The American Physiological Society
- 2012-2014 Member, The Endocrine Society (USA)

2012-2013	President, Postdoctoral Society of the University of Michigan Department of Molecular & Integrative Physiology
2006-2009	Member, The Association for the Study of Obesity
2006-2009	Member, The Biochemical Society
2005-2007	Graduate Student Representative, Faculty Graduate Committee of the University of Cambridge School of Clinical Medicine
2000-2001	Student Representative, Part IA Natural Sciences courses

MANUSCRIPT AND GRANT REVIEWS

Invited grant reviewer for *BBSRC*, *The British Heart Foundation (BHF)*, *The MOVE Research Institute (VU Amsterdam)* and *The Netherlands Organisation for Scientific Research (NWO)*.

Publons profile: <https://publons.com/researcher/1208135/william-p-cawthorn/>

Manuscript reviewer for journals including *eLife*, *Diabetes*, *Science*, *Nat Med*, *J Clin Invest*, *Cell Metabolism*, *Cell Stem Cell*, *PNAS*, *J Biol Chem*, *Am J Physiol Endo Metab*, *Diabetologia*, *Mol Metab*, *Br J Pharmacol*, and *PLoS ONE*. Co-reviewer (with O. MacDougald) for *Cell*, *Dev Cell*, *J Clin Invest*, *Genes Dev*, *Mol Cell Biol*, *Obesity*, *Int J Obesity*, and other journals.

TEACHING, SUPERVISION AND MENTORING

<i>Postdocs & technicians</i>	<u>University of Edinburgh</u> : Member of CVS Teaching Committee (2021-). Main supervisor for two MRC-funded postdoctoral researchers (2015-2020 and 2019-2023), one postdoc funded by a JSPS Fellowship (Japanese Society for the Promotion of Science) (2021-) and one visiting postdoctoral researcher (2017). Co-supervisor for one technician (2020-2022) and mentor to three postdoctoral researchers (2015-present). <u>University of Michigan</u> : Supervisor for one research technician (2009-2013).
<i>Postgraduate students</i>	<u>University of Edinburgh</u> : Main supervisor for four PhD students (2015-2019, 2016-2020, 2018-2022, and 2022-present), one Neuroscience MSc student (2020) and 7 MScR students (2015-2020). Second supervisor for three further PhD students (2017-2020; 2021-present, 2022-present). Supervised ECAT student during lab project (2017). Lecturer for MScR in Cardiovascular Science (2016). <u>University of Michigan</u> : Co-supervisor for one PhD student PhD (2009-2013) and three students doing 1st-year PhD rotations (2010-2013). <u>External thesis examiner</u> for 6 PhD students (4 UK, 1 South Africa, 1 Australia). Current thesis committee member for PhD student in France.
<i>Undergraduate students</i>	<u>University of Edinburgh</u> : Main supervisor for nine final-year students during their 12-week Honours Projects (2016-2023); three students pursuing summer research projects (2015-2017); and a visiting Erasmus+ Trainee student (2017). Lecturer for BSc Honours in Endocrinology (since 2017) and BSc Applied Pharmacology (since 2023). <u>University of Michigan</u> : Main supervisor for six undergraduates during work-study programmes or 10-week summer studentships (2009-2014). Lecturer for my department's Summer Undergraduate Fellowship Program (2009, 2012). <u>University of Cambridge</u> : Main supervisor for one undergraduate during their 8-week summer studentship (2006).
<i>Other training</i>	<ul style="list-style-type: none"> • “<i>Managing Translational Research Projects</i>”, delivered by Edinburgh Innovations (2022). • “<i>Developing your Teaching Philosophy</i>”, delivered by the University of Michigan Center for Research on Learning and Teaching (2013). • “<i>Supervising Researchers: Effective Techniques for Success</i>”, delivered by the University of Edinburgh Institute for Academic Development (2015).

PUBLICATIONS AND BOOK CHAPTERS

* = corresponding or co-corresponding author

1. Suchacki KJ, Thomas BJ, Ikushima YM, Chen KC, Fyfe C, Tavares AAS, Sulston RJ, Lovdel A, Woodward HJ, Han X, Mattiucci D, Brain EJ, Alcaide-Corral CJ, Kobayashi H, Gray GA, Whitfield PD, Stimson RH, Morton NM, Johnstone AM and **Cawthorn WP***. The effects of caloric restriction on adipose tissue and metabolic health are sex- and age-dependent. *eLife* 2023; **12**:e88080. [doi: 10.7554/eLife.88080](https://doi.org/10.7554/eLife.88080).
 - a. Featured in UK and international media (e.g. [Mail Online](#) and [The Sun](#))
2. Austin MJ, Kalampalika F, **Cawthorn WP** and Patel B. Turning the spotlight on Bone Marrow adipocytes: in haematological malignancy and non-malignant conditions. *Br. J. Haematol.* 2023; [doi: 10.1111/bjh.18748](https://doi.org/10.1111/bjh.18748) (Paper in press).
3. Lucas S, Tencerova M, von der Weid B, Andersen TL, Attane C, Behler-Janbeck F, **Cawthorn WP**, Ivaska KK, Naveiras O, Podgorski I, Reagan MR and van der Eerden BCJ. Guidelines for Biobanking of Bone Marrow Adipose Tissue and Related Cell Types: Report of the Biobanking Working Group of the International Bone Marrow Adiposity Society. *Front Endocrinol*, 2021;12:744527. [doi: 10.3389/fendo.2021.744527](https://doi.org/10.3389/fendo.2021.744527)
4. Heydt Q, Xintaropoulou C, Clear A, Austin M, Pislariu I, Miraki-Moud F, Cutillas P, Korfi K, Calaminici M, **Cawthorn WP**, Suchacki KJ, Nagano A, Gribben JG, Smith M, D Cavenagh JD, Oakervee H, Castleton A, Taussig D, Peck B, Wilczynska, A, McNaughton L, Bonnet D, Mardakheh F and Patel B. Adipocytes disrupt the translational programme of acute lymphoblastic leukaemia to favour tumour survival and persistence. *Nat. Communications*, 2021; 12:5507. [doi: 10.1038/s41467-021-25540-4](https://doi.org/10.1038/s41467-021-25540-4)
5. Dillon S, Suchacki KJ, Hsu SN, Stephen LA, Wang R, **Cawthorn WP**, Stewart AJ, Nudelman F, Morton NM and Farquharson C. Ablation of Enpp6 Results in Transient Bone Hypomineralization. *JBMR Plus*, 2020; e10439. [doi: 10.1002/jbm4.10439](https://doi.org/10.1002/jbm4.10439)
6. Suchacki KJ, Morton NM, Vary C, Huesa C, Yadav MC, Thomas BJ, Rajonah S, Bunger L, Ball D, Barrios-Llerena ME, Guntua AR, Khavandgar Z, **Cawthorn WP**, Ferron M, Karsenty G, Murshed M, Rosen CJ, MacRae VE, Millán JL and Farquharson C. PHOSPHO1 is a skeletal regulator of insulin resistance and obesity. *BMC Genomics*, 2020; 18:149. [doi: 10.1186/s12915-020-00880-7](https://doi.org/10.1186/s12915-020-00880-7)
7. Suchacki KJ, Tavares AAS, Mattiucci D, Scheller EL, Papanastasiou G, Gray C, Sinton MC, Ramage LE, McDougald WA, Lovdel A, Sulston RJ, Thomas BJ, Nicholson BM, Drake AJ, Alcaide-Corral CJ, Said D, Poloni A, Cinti S, Macpherson GJ, Dweck MR, Andrews JPM, Williams MC, Wallace RJ, van Beek EJ, MacDougald OA, Morton NM, Stimson RH and **Cawthorn WP***. Bone marrow adipose tissue is a unique adipose subtype with distinct roles in systemic glucose homeostasis. *Nat. Communications*, 2020; 11:3097. [doi: 10.1038/s41467-020-16878-2](https://doi.org/10.1038/s41467-020-16878-2)
8. Morris EV, Suchacki KJ, Hocking J, Cartwright R, Sowman A, Gamez B, Lea R, Drake MT, **Cawthorn WP**, Edwards CM. Myeloma cells down-regulate adiponectin in bone marrow adipocytes via TNF-alpha. *J Bone Miner Res*, 2020;35:942-955 [doi: 10.1002/jbmr.3951](https://doi.org/10.1002/jbmr.3951).
9. Bravenboer N, Bredella MA, Chauveau C, Corsi A, Douni E, Ferris WF, Riminucci M, Robey PG, Rojas-Sutterlin S, Rosen C, Schulz TJ, and **Cawthorn WP***. Standardised Nomenclature, Abbreviations, and Units for the study of Bone Marrow Adiposity: Report of the Nomenclature Working Group of the International Bone Marrow Adiposity Society. *Front Endocrinol*, 2020;10:923 [doi: 10.3389/fendo.2019.00923](https://doi.org/10.3389/fendo.2019.00923)
10. **Cawthorn WP**. Bone Marrow Adipose Tissue. In: Zaidi M, ed. *Encyclopedia of Bone Biology*. Oxford, UK: Oxford: Academic Press; 2020:156-77 [doi: 10.1016/B978-0-12-801238-3.11207-3](https://doi.org/10.1016/B978-0-12-801238-3.11207-3)
11. Wood CL, Suchaki KJ, van 't Hof R, **Cawthorn WP**, Dillon S, Straub V, Wong SC, Ahmed SF, Farquharson C. A comparison of the bone and growth phenotype of *mdx*, *mdx:Cmah*^{-/-} and *mdx:Utrn*^{+/-} murine models with the C57BL/10 wild-type mouse. *Dis Model Mech*, 2020; 13(2). pii: dmm040659. [doi: 10.1242/dmm.040659](https://doi.org/10.1242/dmm.040659)

12. Craft CS, Robles H, Lorenz MR, Hilker ED, Magee KL, Andersen TL, **Cawthorn WP**, MacDougald OA, Harris CA and Scheller EL. Bone marrow adipose tissue does not express UCP1 during development or adrenergic-induced remodeling. *Sci Rep*, 2019; 9, 17427. [doi: 10.1038/s41598-019-54036-x](https://doi.org/10.1038/s41598-019-54036-x)
13. Chau YY and **Cawthorn WP***. Fat cell progenitors get singled out. *Science*, 2019; 364 (6438):328-329. [doi: 10.1126/science.aax2967](https://doi.org/10.1126/science.aax2967)
14. Scheller EL, Khandaker S, Learman BS, **Cawthorn WP**, Anderson LM, Pham HA, Robles H, Wang Z, Li Z, Parlee SD, Simon BR, Mori H, Bree AJ, Craft CS and MacDougald OA. Bone marrow adipocytes resist lipolysis and remodeling in response to β -adrenergic stimulation. *Bone*, 2019;118:32-41. [doi: 10.1016/j.bone.2018.01.016](https://doi.org/10.1016/j.bone.2018.01.016)
15. Sheng L, Ye L, Zhang D, **Cawthorn WP** and Xu B. New insights into the long non-coding RNA SRA: physiological functions and mechanisms of action. *Front Med*, 2018; 5:244. [doi: 10.3389/fmed.2018.00244](https://doi.org/10.3389/fmed.2018.00244)
16. Suchacki KJ and **Cawthorn WP***. Molecular interaction of bone marrow adipose tissue with energy metabolism. *Curr Mol Biol Rep*, 2018;4(2):41-49. [doi: 10.1242/dev.080549](https://doi.org/10.1242/dev.080549).
17. McIlroy GD, Suchacki KJ; Roelofs AJ; Yang W; Fu Y; Bai B; Wallace RJ; De Bari C; **Cawthorn WP**; Han W; Delibegović M and Rochford JJ. Adipose specific disruption of seipin causes early-onset generalised lipodystrophy and altered fuel utilisation without severe metabolic disease. *Mol Metabol*, 2018; 10:55-65. [doi: 10.1016/j.molmet.2018.01.019](https://doi.org/10.1016/j.molmet.2018.01.019)
18. Ge C, Zhao G, Li B, Li Y, **Cawthorn WP**, MacDougald OA and Franceschi RT. Genetic inhibition of PPAR γ S112 phosphorylation reduces bone formation and stimulates marrow adipogenesis. *Bone*, 2018; 107:1-9. [doi: 10.1016/j.bone.2017.10.023](https://doi.org/10.1016/j.bone.2017.10.023)
19. **Cawthorn WP*** and Scheller EL. Editorial: Bone Marrow adipose tissue: Formation, Function, and impact on Health and disease. *Front Endocrinol*, 2017; 8:1-3 (Article 112). [doi: 10.3389/fendo.2017.00112](https://doi.org/10.3389/fendo.2017.00112)
20. Suchacki KJ, Roberts F, Lovdel A, Farquharson C, Morton NM, MacRae VE and **Cawthorn WP***. Skeletal energy homeostasis: a paradigm of endocrine discovery. *J Endocrinol*, 2017; 234(1):R67-R79. [doi: 10.1530/JOE-17-0147](https://doi.org/10.1530/JOE-17-0147)
21. Sulston RJ, Learman BS, Zhang B, Scheller EL, Parlee SD, Simon BR, Mori H, Bree AJ, Wallace RJ, Krishnan V, MacDougald OA, and **Cawthorn WP***. Increased circulating adiponectin in response to thiazolidinediones: investigating the role of bone marrow adipose tissue. *Front Endocrinol*, 2016; 7:1-17 (Article 128). [doi: 10.3389/fendo.2016.00128](https://doi.org/10.3389/fendo.2016.00128).
22. Scheller EL, **Cawthorn WP***, Horowitz MC, and MacDougald OA. Marrow adipose tissue: trimming the fat. *Trends Endocrinol Metab*, 2016; 27(6):392-403. [doi: 10.1016/j.tem.2016.03.016](https://doi.org/10.1016/j.tem.2016.03.016). *Co-first author
23. Sulston RJ and **Cawthorn WP***. Bone marrow adipose tissue as an endocrine organ: close to the bone? *Horm Mole Biol Clin Invest*, 2016; 28(1):21-38. [doi: 10.1515/hmbci-2016-0012](https://doi.org/10.1515/hmbci-2016-0012).
24. Suchacki KJ, **Cawthorn WP**, and Rosen CJ. Bone marrow adipose tissue: formation, function and regulation. *Curr Opin Pharmacol*, 2016; 28:50-56. [doi: 10.1016/j.coph.2016.03.001](https://doi.org/10.1016/j.coph.2016.03.001)
25. Scheller EL, Burr AA, MacDougald OA, and **Cawthorn WP***. Inside out: Bone marrow adipose tissue as a source of circulating adiponectin. *Adipocyte*, 2016; 5(3):251-69. [doi: 10.1080/21623945.2016.1149269](https://doi.org/10.1080/21623945.2016.1149269).
26. Ge C, **Cawthorn WP**, Li Y, Zhao G, MacDougald OA, and Franceschi RT. Reciprocal Control of Osteogenic and Adipogenic Differentiation by ERK/MAP Kinase Phosphorylation of Runx2 and PPAR γ Transcription Factors. *J Cell Physiol*, 2016; 231 (3):587-96. [doi: 10.1002/jcp.25102](https://doi.org/10.1002/jcp.25102).
27. Mori H, Yao Y, Learman BS, Kurozumi K, Ishida J, Sadeesh RK, Overmyer KA, Xue X, **Cawthorn WP**, Reid MA, Taylor M, Ning X, Shah YM, and MacDougald OA. Induction of Wnt11 by hypoxia and hypoxia-inducible factor-1 α regulates cell proliferation, migration and invasion. *Sci Rep*, 2016; 6:21520. [doi: 10.1038/srep21520](https://doi.org/10.1038/srep21520)

28. **Cawthorn WP***, Scheller EL, Parlee SD, Pham HA, Learman BS, Redshaw CMH, Sulston RJ, Burr AA, Das AK, Simon BR, Mori H, Bree AJ, Schell B, Krishnan V, and MacDougald OA. Expansion of bone marrow adipose tissue during caloric restriction is associated with increased circulating glucocorticoids and not with hypoleptinemia. *Endocrinology*, 2016; 157(2):508-21. [doi: 10.1210/en.2015-1477](https://doi.org/10.1210/en.2015-1477). ***Corresponding author.**
29. Scheller EL, Doucette CR, Learman BS, **Cawthorn WP**, Khandaker S, Schell B, Ding SY, Bredella MA, Fazeli PK, Khoury B, Jepsen KP, Pilch PF, Klibanski A, Rosen CJ, and MacDougald OA. Region-specific variation in the properties of skeletal adipocytes reveals regulated and constitutive marrow adipose tissues. *Nat. Communications*, 2015; 6:7808. [doi: 10.1038/ncomms8808](https://doi.org/10.1038/ncomms8808).
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PREPRINTS

1. Morris DM, Wang C, Papanastasiou G, Gray CD, Badr S, Paccou J, Semple SIK, MacGillivray T and **Cawthorn WP***. A novel deep learning method for large-scale analysis of bone marrow adiposity using UK Biobank Dixon MRI data. *medRxiv* 2022. [doi: 10.1101/2022.12.06.22283151](https://doi.org/10.1101/2022.12.06.22283151)
2. Norris E, Clark K, Munafo M, Jay C, Baldwin J, Lautarescu A, Pedder H, Page M, Rinke EM, Burn C, **Cawthorn WP**, Ballou N, Glover S, Evans S, Rossit S, Soltanlou M, Wise E, Kelson M, Soliman N, Jones AJ, Costello R, Smailes D, Wilkinson L, Piccardi ES, Partridge AM, Hulme C, Schultze A and Pennington CR. Awareness of and Engagement with Open Research Behaviours: Development of the Brief Open Research Survey (BORS) with the UK Reproducibility Network. *MetaArXiv* 2022 June 8. [doi:10.31222/osf.io/w48yh](https://doi.org/10.31222/osf.io/w48yh)
3. Suchacki KJ, Thomas BJ, Fyfe C, Tavares AAS, Sulston RJ, Lovdel A, Woodward HJ, Han X, Mattiucci D, Brain EJ, Alcaide-Corral CJ, Gray GA, Whitfield PD, Stimson RH, Morton NM, Johnstone AM and **Cawthorn WP***. The effects of caloric restriction on adipose tissue and metabolic health are sex- and age-dependent. *bioRxiv* 2022. [doi: 10.1101/2022.02.20.481222](https://doi.org/10.1101/2022.02.20.481222)

- Suchacki KJ, Tavares AAS, Mattiucci D, Scheller EL, Papanastasiou G, Gray C, Sinton MC, Ramage LE, McDougald WA, Lovdel A, Sulston RJ, Thomas BJ, Nicholson BM, Drake AJ, Alcaide-Corral CJ, Said D, Poloni A, Cinti S, Macpherson GJ, Dweck MR, Andrews JPM, Williams MC, Wallace RJ, van Beek EJ, MacDougald OA, Morton NM, Stimson RH and **Cawthorn WP***. Bone marrow adipose tissue is a unique adipose subtype with distinct roles in systemic glucose homeostasis. *bioRxiv* 2019. [doi: 10.1101/673129](https://doi.org/10.1101/673129)

DATASETS AND CODE

- Cawthorn WP**; Ikushima YM; Kobayashi H; Chen KC (2023). Sex differences in the effects of caloric restriction (CR) on hepatic gene expression in mice. GEO Datasets, [GSE230402](https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE230402)
- Cawthorn WP**; Suchacki, KJ; Thomas, BJ; Ikushima, YM; Chen, KC (2023). The effects of caloric restriction on adipose tissue and metabolic health are sex- and age-dependent, 2003-2023 [dataset]. University of Edinburgh. Edinburgh Medical School. Centre for Cardiovascular Science. <https://doi.org/10.7488/ds/3817>
- Cawthorn WP**, Scheller EL, MacDougald OA (2019). Comparison of white adipose tissue and bone marrow adipose tissue from New Zealand White rabbits. GEO Datasets, [GSE138690](https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE138690).
- Papanastasiou G, Suchacki KJ, **Cawthorn WP** (2019). ROCPerPixel. GitHub, <https://github.com/Georgerun/ROCPerPixel>

CONFERENCES AND ABSTRACTS

Invited Seminars

- Cawthorn, WP**. Bone marrow adipocytes as novel regulators of metabolic homeostasis, immune function, and skeletal health. *Invited speaker for [ECTS Webinar](#), 17 Aug 2023*
- Cawthorn, WP**. Improving research culture and integrity through Open Science. *Invited Keynote speaker for the 2nd Annual Edinburgh Open Research Conference, Edinburgh, UK, 16 May 2023.*
- Cawthorn, WP**. How Does Bone Marrow Adipose Tissue Impact Human Health? Insights from Deep Learning for Large-scale Analyses in the UK Biobank. *Invited speaker for the European Calcified Tissue Society Annual Meeting (ECTS2023), Liverpool, UK, 14 Apr 2023.*
- Cawthorn, WP**. Open Science: a pathway for better science (and happier scientists). *Invited speaker for Research Culture Seminar Series, University of Dundee, 8 Mar 2023.*
- Cawthorn, WP**. Open Science: a pathway for better science (and happier scientists). *Invited speaker for DATAETHICS Winter School, Leiden, 23 Jan 2023.*
- Cawthorn, WP**. Bone marrow adipose tissue: A novel regulator of metabolic homeostasis, immune function and skeletal health? *Invited speaker for Endocrinology, Diabetes, & Metabolism Research Seminar, Department of Medicine, University of Pittsburgh, 16 Nov 2022.*
- Cawthorn, WP**. Bone Marrow Adipose Tissue. *Invited speaker for the 38th Congress of the French Society for Endocrinology (SFE Nantes 2022), Nantes, France, 12 Oct 2022.*
- Cawthorn, WP**. Sex and fat and blood and bones: Bone marrow adipose tissue as a novel regulator of immune function, bone biology and metabolic health. *Invited speaker for the International Symposium for Bone Regeneration (ISBM), Berlin, 4 Oct 2022.*
- Cawthorn, WP**. How Does Bone Marrow Adipose Tissue Impact Human Health? Insights from Deep Learning for Large-scale Analyses in the UK Biobank. *Invited speaker for Centre for Cardiovascular Science Annual Symposium, Edinburgh, UK, 23 Jun 2022.*
- Cawthorn, WP**. Open Research: a path to improving research integrity and culture? *Invited speaker for 2nd Annual Postgraduate Research Integrity Conference (organised by the University of Dundee), 18 May 2022.*
- Cawthorn, WP**. Update on BMA Nomenclature: the importance of speaking a common language. *Invited speaker for the 49th European Calcified Tissue Society Congress, Helsinki, Finland, 6-10 May 2022 (talk presented virtually).*

12. **Cawthorn, WP.** Sex and fat and blood and bones: Bone marrow adipose tissue as a novel regulator of immune function, bone biology and metabolic health. *Invited speaker for the Endocrine Grand Rounds meeting, University of California San Francisco, 23 Mar 2022*
13. **Cawthorn, WP.** How Does Bone Marrow Adipose Tissue Impact Human Health? Insights from Deep Learning for Large-scale Analyses in the UK Biobank. *Invited speaker for University of Edinburgh - Danish Diabetes Association Mini-Symposium on Adipose Biology. Copenhagen, Denmark 01 Mar 2022*
14. **Cawthorn, WP.** Research assessment and research culture: an adverse impact? *Invited speaker for University of Edinburgh Research Cultures meeting, 14 Dec 2021*
15. **Cawthorn, WP.** Building and open research culture. *Invited speaker for Edinburgh ReproducibiliTEA meeting, 29 Oct 2021*
16. **Cawthorn, WP.** BMAT and metabolism. *Keynote speaker for the inaugural Summer School of the International Bone Marrow Adiposity Society, 8 Sep 2021*
17. **Cawthorn, WP.** Metabolic and endocrine functions of bone marrow adipose tissue. *Invited speaker for the 28th European Congress on Obesity (ECO2021), virtual meeting, 10 May 2021*
18. **Cawthorn, WP.** Adipocytes and Bone. *Invited speaker for the ECTS-GEMSTONE Digital Masterclass (virtual summer school), 24 Jun 2020*
19. **Cawthorn, WP.** Endocrine and metabolic functions of bone marrow adipose tissue. *Invited speaker for the 14th Congress of the International Society of Bone Morphometry (ISBM2019), Orlando, Florida, USA, 24 Sep 2019*
20. **Cawthorn, WP.** Endocrine and metabolic functions of bone marrow adipose tissue. *Invited speaker for the 5th International Meeting on Bone Marrow Adiposity (BMA2019), Odense, Denmark, 22 Aug 2019*
21. **Cawthorn, WP.** Academic success beyond the journal impact factor: a junior PI's view. *Invited speaker for FAIR Science: tricky problems and creative solutions, Edinburgh, UK, 4 Jun 2019.*
22. **Cawthorn, WP.** Metabolic and endocrine functions of bone marrow adipose tissue. *Invited speaker for the 18th International Congress of Endocrinology (ICE2018), Cape Town, South Africa, 1 Dec 2018.*
23. **Cawthorn, WP.** Inside out: bone marrow adipose tissue as a novel endocrine organ. *Presented at the Department of Internal Medicine, Erasmus MC, Rotterdam, Netherlands, 8 Nov 2018*
24. **Cawthorn, WP.** Dissecting the metabolic functions of bone marrow adipose tissue using PET-CT. *Invited speaker for the PET is Wonderful Annual Meeting, Edinburgh, UK, 29 Oct 2018.*
25. **Cawthorn, WP.** Bone marrow adipose tissue: Endocrine aspects and impact on metabolic homeostasis. *Invited speaker for the 45th European Calcified Tissue Society Congress, Valencia, Spain, 26-29 May 2018.*
26. **Cawthorn, WP.** Bone marrow adipose tissue: starving for attention. *Invited speaker for the 20th European Congress of Endocrinology (ECE2018), Barcelona, Spain, 19-22 May 2018.*
27. **Cawthorn, WP.** Why is our bone marrow full of fat? Investigating the formation and function of bone marrow adipose tissue. *Invited speaker for the Second Basic Research in Bone and Cartilage Biology (BBC2) meeting, 5 Oct 2017, Nantes, France.*
28. **Cawthorn, WP.** Bone marrow adipose tissue as a regulator of metabolic and skeletal function. *Invited speaker for the Bone Research Society annual meeting (BRS2017), Bristol, UK, 27 Jun 2017.*
29. **Cawthorn, WP.** Bone marrow adipose tissue: a novel endocrine organ. *Presented at the University of Oxford Centre for Diabetes, Endocrinology and Metabolism (OCDEM), Oxford, UK, 10 May 2017.*
30. **Cawthorn, WP.** Bone marrow adipose tissue: starving for attention? *Presented at the William Harvey Research Institute, Queen Mary University of London, London, UK, 20 Feb 2017.*
31. **Cawthorn, WP.** Bone marrow adipose tissue: a novel endocrine organ. *Invited lecture at Université Lille 2, Lille, France, 2 Dec 2016.*

32. **Cawthorn, WP.** Bone marrow adipose tissue: starving for attention? *Presented at the Rowett Institute, Aberdeen, UK, 8 Nov 2016.*
33. **Cawthorn, WP.** Bone marrow adipose tissue: a novel regulator of metabolic and skeletal health? *Presented at the Roslin Institute Seminar Series, Edinburgh, UK, 21 Sep 2016.*
34. **Cawthorn WP.** Bone marrow adipose tissue: starving for attention? *Presented at Bone Marrow Adiposity 2016 (BMA2016), Rotterdam, Netherlands, 25 Aug 2016.*
35. **Cawthorn WP.** Bone marrow adipose tissue as a source of serum adiponectin: the ‘adiponectin paradox’ explained? *Presented at Bone Marrow Adiposity 2015 (BMA2015), Lille, France, 28 Aug 2015.*
36. **Cawthorn WP.** Bone marrow adipose tissue as a novel endocrine organ. *Presented at the 17th European Congress of Endocrinology (ECE2015), Dublin, Ireland, 18 May 2015.*
37. **Cawthorn WP.** What’s the matter with MAT? Bone marrow adipose tissue as a novel regulator of metabolic homeostasis. *Presented at The University of Dundee, Dundee, UK, 20 May 2014.*
38. **Cawthorn WP.** Bone marrow adipose tissue as a regulator of skeletal remodelling and metabolic homeostasis. *Presented at The University of Aberdeen (6 August 2013, Aberdeen, UK) and at The University of Dundee (7 August 2013, Dundee, UK).*
39. **Cawthorn WP.** Bone marrow adipose tissue as a source of serum adiponectin: the ‘adiponectin paradox’ explained? *ENDO 2013, San Francisco, CA, USA, 16 June 2013. Awarded an “Outstanding Abstract Award” by the Endocrine Society.*
40. **Cawthorn WP.** Energy homeostasis and metabolic disease: the many faces of adipocytes. *University of Michigan Pediatric Endocrinology Seminar, Ann Arbor, MI, USA, 22 Jan 2013.*
41. **Cawthorn WP.** Metabolic functions of bone marrow adipose tissue. *Eli Lilly Innovation Fellowship Award Interview, Indianapolis, IN, USA, 18 May 2012.*
42. **Cawthorn WP, Bree AJ, Yao Y, Du B, Hemati N, Martinez-Santibañez G and MacDougald OA.** Wnt6, Wnt10a and Wnt10b inhibit adipogenesis and stimulate osteoblastogenesis through a β -catenin-dependent mechanism. *University of Michigan and Wayne State University Physiology Symposium, Ann Arbor, MI, USA, 26 Aug 2011*
43. **Cawthorn WP.** Mechanistic insights into the inhibition of adipogenesis by tumour necrosis factor-alpha. *The Rank Prize Funds Mini-Symposium on Adiposity, Lake District, UK, 10-13 Sep 2007. Awarded the Rank Prize for giving the best presentation of the symposium.*

Posters and other talks

1. **Cawthorn WP.** How does bone marrow adiposity impact human health? Insights from population-scale analysis in the UK Biobank. *Short talk presented at the 7th International Meeting on Bone Marrow Adiposity (BMA2022), 28-30 Sep 2022, Athens, Greece.*
2. Promruk W, **Cawthorn WP**, Staines K, Stephen L and Farquharson C. Understanding the balance between osteogenesis and adipogenesis in a mouse model of chronic kidney disease. *Presented at the 2022 Bone Research Society meeting (BRS2022), 6-8 Jul 2022, Manchester, UK*
3. Morris DM, Wang C, Papanastasiou G, Gray C, Badr S, Paccou J, Semple SIK, MacGillivray T and **Cawthorn WP.** A novel deep learning method for large-scale analysis of bone marrow adiposity in the UK Biobank: validation and new insights for human health. *Presented at the 2021 Adipose Tissue Discussion Group meeting (ATDG2021), 9-10 Dec 2021, Edinburgh, UK.*
4. Thomas BJ, Suchacki KJ, Fyfe C, Tavares AAS, Sulston RJ, Lovdel A, Woodward H, Han X, Mattiucci D, Brain E, Alcaide-Corral CJ, Gray G, Whitfield PD, Stimson RH, Morton NM, Johnstone AM and **Cawthorn WP.** The effects of caloric restriction on adipose tissue and metabolic health are sex- and age-dependent. *Presented at the 2021 Adipose Tissue Discussion Group meeting (ATDG2021), 9-10 Dec 2021, Edinburgh, UK.*
5. Thomas BJ, Suchacki KJ, Fyfe C, Tavares AAS, Sulston RJ, Lovdel A, Woodward H, Han X, Mattiucci D, Brain E, Alcaide-Corral CJ, Gray G, Whitfield PD, Stimson RH, Morton NM, Johnstone AM and **Cawthorn WP.** The effects of caloric restriction on adipose tissue and

- metabolic health are sex- and age-dependent. *Presented at the 2021 Society for Endocrinology annual meeting (SfE BES 2021)*, 8-10 Nov 2021, Edinburgh, UK.
6. Morris DM, Wang C, Papanastasiou G, Gray C, Semple SIK, MacGillivray T and **Cawthorn WP**. Bone marrow adiposity evaluation using Dixon MRI Fat Fraction with Machine Learning Segmentation in the UK Biobank – Initial Validation. *Presented at the 2021 Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM 2021)*, 15-20 May 2021 (Virtual Meeting).
 7. Lovdel A, Denham S, Cawthorn WP and Homer NZM. Simultaneous analysis of steroids in bone marrow by LC-MS/MS following semi-automated sample extraction. *Presented at the Scottish Metabolomics Network Meeting*, 14-15 November 2019, Glasgow, UK.
 8. Thomas BJ, Suchacki KJ, Fyfe C, Tavares AAS, Sulston RJ, Lovdel A, Woodward H, Han X, Sinton M, Alcaide-Corral CJ, Gray G, Stimson RH, Morton NM, and **Cawthorn WP**. Why do the metabolic effects of calorie restriction differ between males and females? Use of PET/CT imaging to identify systemic and tissue-specific differences. *Presented at the 2018 Adipose Tissue Discussion Group (ATDG2018)*, 7 Dec 2018, Edinburgh, UK.
 9. Thomas BJ, Suchacki KJ, Fyfe C, Tavares AAS, Sulston RJ, Lovdel A, Woodward H, Han X, Sinton M, Alcaide-Corral CJ, Gray G, Stimson RH, Morton NM, and **Cawthorn WP**. Why do the metabolic effects of calorie restriction differ between males and females? Use of PET/CT imaging to identify systemic and tissue-specific differences. *Presented at the 2018 PET is Wonderful meeting (PiW 2018)*, 29 Oct 2018, Edinburgh, UK.
 10. Suchacki KJ, Tavares A, Mattiucci D, Sinton MC, Alcaide CC, Said D, Poloni A, Cinti S, MacPherson G, Amin A, Scheller E, MacDougald O, Stimson R, Morton NM and **Cawthorn WP**. Bone marrow adipose tissue is molecularly and functionally distinct to white and brown adipose tissues. *Presented by Karla Suchacki at Bone Marrow Adiposity 2018*, 29-31 August 2018, Lille, France.
 11. Lovdel A, Suchacki KJ, Sulston RJ, Wallace RJ, MacPherson G, Stimson RH, Morton NM, Homer NZM, Chapman KE and **Cawthorn WP**. Investigating glucocorticoids as mediators of increased bone marrow adiposity during caloric restriction. *Presented by Andrea Lovdel at Bone Marrow Adiposity 2018*, 29-31 August 2018, Lille, France.
 12. Suchacki KJ, Tavares A, Sinton MC, Alcaide CC, Stimson R, Morton NM and **Cawthorn WP**. [18F]-FDG PET/CT imaging: A tool to reveal the metabolic functions of bone marrow adipose tissue. *Presented by Karla Suchacki at the 2018 European Congress of Endocrinology (ECE2018)*, 19-22 May 2018, Barcelona, Spain.
 13. Lovdel A, Suchacki KJ, Sulston RJ, Wallace RJ, MacPherson G, Stimson RH, Morton NM, Homer NZM, Chapman KE and **Cawthorn WP**. Investigating glucocorticoids as mediators of increased bone marrow adiposity during caloric restriction. *Presented by Andrea Lovdel at the 2018 European Congress of Endocrinology (ECE2018)*, 19-22 May 2018, Barcelona, Spain.
 14. Sulston RJ, Suchacki KJ, Lovdel A, Han X, Morton NM and **Cawthorn WP**. Investigating the role of adiponectin as a mediator of improved metabolic health during caloric restriction. *Presented by Richard Sulston at Keystone Symposium*, 21-25 January 2018, Keystone, CO, USA.
 15. Suchacki KJ, Tavares A, Sinton MC, Alcaide CC, Stimson R, Morton NM and **Cawthorn WP**. Revealing the metabolic functions of bone marrow adipose tissue by [18F]-FDG PET/CT imaging. *Talk presented by Karla Suchacki at Bone Marrow Adiposity 2017*, 31 August – 1 September 2017, Lausanne, Switzerland.
 16. Suchacki KJ, Tavares A, Sinton MC, Alcaide CC, Stimson R, Morton NM and **Cawthorn WP**. ^{18}F -FDG PET/CT imaging following insulin treatment and cold exposure in mice. *Presented by Karla Suchacki at Bone Research Society 2017*, 25-27 June 2017, Bristol, UK.
 17. Suchacki KJ, Roberts F, Redshaw CMH, Wallace RJ, Verma M, Chapman K, and **Cawthorn WP**. Mice lacking 11 β -hydroxysteroid dehydrogenase 1 (11 β -HSD1) have no alteration in bone marrow adipose tissue. *Bone Marrow Adiposity 2016 (BMA2016)*, 25-26 August 2016, Rotterdam, Netherlands.

18. Sulston RJ, Learman BS, Zhang B, Scheller EL, Parlee SD, Simon BR, Mori H, Bree AJ, Wallace RJ, Krishnan V, MacDougald OA, and **Cawthorn WP**. Increased circulating adiponectin in response to thiazolidinediones: investigating the role of bone marrow adipose tissue. *Bone Marrow Adiposity 2016 (BMA2016)*, 25-26 August 2016, Rotterdam, Netherlands.
19. **Cawthorn WP**, Scheller EL, Parlee SD, Pham HA, Learman BS, Das AK, Simon BR, Mori H, Bree AJ, Schell B, Krishnan V, and MacDougald OA. Decreased circulating leptin is neither necessary nor sufficient for increased bone marrow adipose tissue during caloric restriction. *Bone Marrow Adiposity 2015 (BMA2015)*, 28-29 August 2015, Lille, France.
20. Scheller EL, **Cawthorn WP**, Learman BS, Wu B, Andersen L, Pham HA, Khandaker S, Burr A, Parlee SD, Simon B, Mori H, Bree AJ, Schell B, and MacDougald OA. Bone marrow adipocytes selectively resist lipolysis in response to fasting and β -adrenergic stimulation. *ASBMR Annual Meeting*, 9-12 October 2015, Seattle, WA, USA.
21. Scheller EL, **Cawthorn WP**, Learman BS, Mori H, Simon B, Parlee SD, Ning X, Miller JD, Gallagher KA, Fazeli PK, Rosen CJ, Horowitz MC, Klibanski A and MacDougald OA. The Metabolic Nature of Marrow Fat: insulin signaling, CREB phosphorylation and the 'adiponectin paradox'. *ASBMR Annual Meeting*, 6 October 2013, Baltimore, MD, USA.
22. **Cawthorn WP**. Bone marrow adipose tissue as a source of serum adiponectin: the 'adiponectin paradox' explained? *IUPS 2013*, 23 July 2013, Birmingham, UK.
23. **Cawthorn WP**, Scheller EL, Learman BS, Parlee SD, Simon B, Mori H, Ning X, Bree AJ, Schell B, Broome DT, Soliman SS, DelProposto JL, Lumeng CN, Mitra A, Pandit SV, Gallagher KA, Miller JD, Krishnan V, Fazeli PK, Bredella MA, Klibanski A, Horowitz MC, Rosen CJ and MacDougald OA. Adiponectin secretion from bone marrow adipose tissue contributes to the paradoxical increase in serum adiponectin with caloric restriction. *Michigan Diabetes Research Center (MDRC) Symposium*, 27 April 2013, Ann Arbor, MI, USA.
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ACTIVITIES PROMOTING IMPACT AND ENGAGEMENT

Since 2015 I have led and delivered public engagement activities, both for knowledge exchange and also to facilitate teaching and community building among students and early career researchers. For example, in 2015-2016 I co-organised and delivered the ‘Healthy Heart’ event at the 2016 Edinburgh International Science Festival, including leading a group of postgraduate students and postdoctoral researchers.

In 2019 I began coordinating the development of a public engagement activity entitled “The Many Faces of Fat”, bringing together a team of over 10 postgraduate students, postdocs and PIs. This activity was to be delivered at the 2020 Edinburgh International Science Festival, which was cancelled owing to the pandemic. Therefore, in 2021 I began working with my department’s Impact & Engagement Administrator to relaunch this activity, including leading a group of students and postdocs to deliver it at the 2022 Falkirk Science Festival (May 2022) and the 2023 Edinburgh International Science Festival (April 2023).

Finally, in mid-2021 I worked with public engagement coordinators from the Edinburgh Research Office to devise an activity centred around the COP26 climate conference. Through these efforts I was a co-coordinator and panellist for a UoE public engagement event entitled “*Changing World Conversations: Rethink travel for a healthier future*”, which was livestreamed on the UoE YouTube channel (<https://youtu.be/ERqCY0NR6fo>) on 28th October 2021. This channel has over 100,000 followers, thereby providing an opportunity for significant impact and knowledge exchange.

OTHER ACTIVITIES AND INTERESTS

<i>Science</i>	Science policy and communication; open science and research culture; history and philosophy of science; science education; public health policy; social psychology.
<i>Sports</i>	Cycling (road racing & mountain biking – Vice President of Ann Arbor Velo Club, 2012); running; kayaking; rock climbing; snowboarding/skiing; rugby (Captain, Clare College Rugby Club, 2002-2003); darts (Captain, Cambridge University Darts Club, 2002-2003).
<i>Travel</i>	Lived in the United States from 1987-1997 and 2009-2014. Travel destinations include China, New Zealand, Morocco, Chile, Mongolia, Russia and mainland Europe
<i>Other</i>	Reading, cooking, photography, and graphic design. I have no religious affiliation but am a licensed Minister in the USA (<i>non-denominational</i>) and have been the Officiant at friends’ weddings.

REFEREES

Postdoctoral Mentor

Professor Ormond MacDougald,
Department of Molecular and Integrative Physiology,
University of Michigan Medical School,
Brehm Center, 1000 Wall Street, Room 6313
Ann Arbor, MI, USA, 48105

Tel: (+1) 734-647-4880
Email: macdouga@umich.edu

PhD Advisor

Professor Steve O’Rahilly
Institute of Metabolic Science
Addenbrooke’s Hospital,
Hills Road,
Cambridge, UK, CB2 0QQ

Tel: (+44) 1223 336855
Email: so104@medschl.cam.ac.uk