Dr Gwilym M Morris
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Consultant Cardiologist and Cardiac Electrophysiologist &
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## Degrees

2010 PhD (University of Manchester)
2005 MA (University of Oxford)
2001 BmBCh (University of Oxford)
1998 BA (University of Oxford, Physiological Sciences, 2i)

## Qualifications

2015 CCT Cardiology
2011 Adult Advanced Life Support (European Resuscitation Council)
2005 MRCP (Edinburgh, UK)

## Personal Research Prizes

2012 British Society of Cardiovascular Research, Young Investigator Award, Runner up
2011 Heart Rhythm UK, Young Investigator Award, Winner
2010 Turnberg Cup (clinical academic trainees award), University of Manchester
2010 AstraZeneca, Clinical Research Prize runner up
2009 University of Manchester School of Clinical and Laboratory Sciences Research Showcase. Poster presentation 2nd prize
1998 Andrew Hopley Prize, University of Oxford. (Best research dissertation)
1998 Wellcome Trust Scholarship, for vacation research
1996 and 1997 St Edmund Hall, University of Oxford. Open scholarship for academic achievement.
1994 and 1995 Stockport Grammar School Science Prize

## Other Research Prizes

2015 British Cardiac Society Young Investigator Award finalist (senior author)
2013 British Parliamentary and Scientific Committee GW Mendel Medal finalist (senior author; http://www.setforbritain.org.uk)
2013 Central Manchester Foundation Trust Research and Innovation conference, Winner (senior author)

## Publications

www.orcid.org, search for orcid ID 0000-0001-9893-6648

**Morris GM**, Heck P, Segan L, McLellan A, Walters TE, Nisbet A, Morton JB, Kistler PM, Kalman JM. Cristal tachycardia, electrophysiological characterization and long-term ablation outcomes. 2015. In preparation.

**Morris GM**, Heck P, Segan L, McLellan A, Walters TE, Nisbet A, Morton JB, Kistler PM, Kalman JM. Bachmann's bundle atrial tachycardias: electrocardiographic and electrophysiological characterization. 2015. In preparation.

Walters TE, Nisbet A, **Morris GM**, Tan G, Mearns M, Teo E, Lewis N, Ng A, Gould P, Lee G Joseph S, Morton JB, Zentner D, Sanders P, Kistler PM, Kalman JM. Progression of Atrial Remodeling in Patients with High Burden Atrial Fibrillation: Implications for Early Ablative Intervention. Heart rhythm, 2015; in press.

Walters TE, Lee G, **Morris GM**, Spence S, Larobina M, Atkinson A, Antippa P, Goldblatt J, Royse A, O'Keefe M, Sanders P, Morton JB, Kistler PM, Kalman JM. Temporal stability of rotors and atrial activation patterns in persistent human atrial fibrillation: a high-density epicardial mapping study of prolonged recordings. JACC Electrophysiology, 2015;1:14

Orsborne C, **Morris GM**, Brown BD. Cardiac arrest caused by a pacemaker check. BMJ Case Reports. 2015;(Jan)

**Morris GM**, Salih Z, Wynn GJ, Ahmed FZ, Brown B, Wright DJ, Zaidi A. Patient radiation dose during fluoroscopically guided biventricular device implantation. ACTA Cardiologica, 2014;69:491

D Souza A, Bucchi A, Johnsen AB, Monfredi O, Logantha S, Yanni J, Prehar S, Hart G, Cartwright E, Wisloff U, Dobryznski H, DiFrancesco D, Boyett MR*, **Morris GM***. *Joint senior authors. Exercise training reduces resting heart rate via downregulation of the pacemaker channel HCN4 and the funny current If. Nature Communications. 2014;5:3775. doi: 10.1038/ncomms4775

**Morris GM**, D'Souza A, Dobrzynski H, Lei M, Choudhury M, Billeter R, Kryukova Y, Robinson RB, Kingston PA, Boyett MR. Characterization of a right atrial subsidiary pacemaker and acceleration of the pacing rate by HCN over-expression. Cardiovasc Res, 2013;100:160

Morgan KP, **Morris GM**, Al-Najjar Y, Clarke B, Fath-Ordoubadi F, Fraser D, Mahadevan V, Mamas M, El-Omar MM. Percutaneous intervention on anomalous circumflex coronary arteries - a single centre experience. Cardiovasc Revasc Med. 2012;13:335

**Morris GM,** Clarke K, Satia I, Khan S. The importance in being earnest; in femoral venipuncture haemostasis. BMJ Case Reports; doi: 10.1136 / bcr.07.2011.4434.

**Morris GM**, Innasumuthu AL, Fox JP, Perry RA. The association of heart valve diseases with coronary artery dominance. J Heart Valve Dis. 2010:19;389

**Morris GM**, O'Grady E, Wynne G, Davis G. Retroperitoneal hematoma after diagnostic coronary angiography caused by collateralization of a chronic common femoral artery occlusion secondary to childhood femoral cannulation. Circ Cardiovasc Interv. 2009;2:580-581

Mongkolsapaya J, Cowper AE, Xu XN, **Morris G**, McMichael AJ, Bell JI, Screaton GR. Lymphocyte inhibitor of TRAIL (TNF-related apoptosis-inducing ligand): a new receptor protecting lymphocytes from the death ligand TRAIL. J Immunol. 1998; 160:3-6.

## Reviews and Editorials

Choudry M, Boyett MR, **Morris GM.** The biology of sinus node disease. Arrhythmia and Electrophysiology Review, 2015;4:28

Haqqaini H, **Morris GM**, Kistler P, Kalman JM. Electrocardiographic characteristics of focal atrial tachycardias. Cardiac Electrophysiology Clinics, 2014;6:459

**Morris GM**, Kalman JM. Fibrosis, electrics and genetics, perspectives on sinoatrial node disease. Circ J, 2014;78:1272

**Morris GM**, Kalman JM, Boyett MR. Low heart rate on exercise as a predictor of atrial fibrillation is evidence of remodeling but is it electrical, structural or autonomic? Circ Arrhythm Electrophysiol, 2013;6:e101

**Morris GM**, Kalman JM. Editorial re: Progression of atrial fibrillation after a failed initial ablation procedure in patients with paroxysmal atrial fibrillation: a randomized comparison of drug therapy versus reablation. Jan 2014; http://afibprofessional.cardiosource.org/Article-of-the-Month/2014/01/AFib-Reablation-or-AAD.aspx

Ahmed FZ, **Morris GM**, Allen S, Khattar R, Mamas M, Zaidi A. Not all pacemakers are created equal: MRI conditional pacemaker and lead technology. J Cardiovasc Electrophysiol, 2013;24:1059

Dobrzynski H, Atkinson A, D'Souza A, Fraser J, Inada S, Logantha S, Monfredi O, **Morris GM**, Moorman AFM, Nikolaidou T, Szuts V, Yanni J, Anderson RH, Boyett MR. Structure, function and clinical relevance of the cardiac conduction system, including the atrioventricular ring and outflow tract tissues. Pharmacol Ther, 2013;139:260

Boyett MR, D'Souza A, Zhang H, **Morris GM**, Dobrzynski H, Monfredi O. Reply to Matelot, Schnell, Kervio, Thillaye du Boullay, and Carre. J Appl Physiol, 2013;114:1757

Boyett MR, D'Souza A, Zhang H, **Morris GM**, Dobrzynski H, Monfredi O. Viewpoint: Resting bradycardia in athletes is not the result of high vagal tone. J Appl Physiol, 2013;114:1351

**Morris GM**, Monfredi O, Boyett MR. Not so fast! Sick sinus syndrome is a complex and incompletely understood disease that might prove hard to model in animals. Cardiovasc Res. 2011;92:178

**Morris GM**, Billeter R, Dobrzynski H. Detection and Measurement of Cardiac Ion Channels. In, Cardiac electrophysiology, methods and models. Sigg D 2010 (Ed). New York. Springer

Monfredi O, Dobryzinski H, Mondal T, Boyett MR, **Morris GM**. The Anatomy and Physiology of the Sinoatrial Node - A Contemporary Review. PACE. 2010:33;1392

**Morris GM**, Boyett MR. Perspectives - biological pacing, a clinical reality? Therapeutic Advances in Cardiovascular Disease 2009:3;479

## Published abstracts

Pathik B, Walters T, **Morris GM**, Morton J, Kalman J, Lee G. Three-dimensional (3D) wavemapping of human persistent atrial fibrillation. Heart, Lung and Circulation, 2015; 24:S252

McLellan A, Prabhu S, Voskoboinik A, Wong M, Walters T, Pathik B, **Morris GM**, Nisbet A, Lee G, Morton J, Kalman J, Kistler P. Isolation of the posterior left atrial wall for patients with persistent atrial fibrillation: Impact of adenosine testing for dormant posterior LA conduction. Heart, Lung and Circulation, 2015; 24:S240

Walters T, Wick K, Tan G, Nisbet A, **Morris GM**, Mearns M, Morton J, Bryant C, Kistler P, Kalman J. A study of the clinical and organic cardiac predictors of AF symptom severity and quality of life: AF burden but not LV diastolic function predicts severity. Heart, Lung and Circulation, 2015; 24:S372

Walters T, Wick K, Nisbet A, **Morris GM**, Morton J, Bryant C, Kistler P, Kalman J. High prevalence of suicidal ideation in AF: influence of psychology, AF symptom severity and AF burden. Heart, Lung and Circulation, 2015; 24:S382

Walters T, Wick K, Tan G, Nisbet A, **Morris GM**, Mearns M, Morton J, Bryant C, Kistler P, Kalman J. A study of the psychological predictors of AF severity and quality of life in human AF: personality style is key. Heart, Lung and Circulation, 2015; 24:S373

Walters T, Nisbet A, **Morris GM**, Tan G, Mearns M, Morton J, Joseph S, Lee G, Kistler P, Kalman J. Progression of atrial remodelling in patients with high burden AF: implications for early ablative intervention. Heart, Lung and Circulation, 2015; 24:S114

Pathik B, Walters T, **Morris GM**, Kalman J, Lee G. Three-Dimensional (3D) Wavemapping of Human Persistent Atrial Fibrillation. 2015; 36: Suppl 1

Choudhury M, Yanni J, Kakar S, D'Souza A, Kingston P, Dobrzynski H, Boyett MR, **Morris GM.** Tbx18 Overexpression Improves Function and Alters Gene Expression in Bradycardic Subsidiary Right Atrial Pacemaker Tissue. Europace, 2015; 17: iii205

Choudhury M, Yanni J, Kakar S, D'Souza A, Kingston P, Dobrzynski H, Boyett MR, **Morris GM.** (BCS young investigator award YIA1) TBX18 Biopacemaking improves beating rate and alters gene expression in bradycardic subsidiary right atrial pacemaker tissue. Heart, 2015;101:S4 A121-A123

Pathik B, Walters TE, Lee G, **Morris GM**, Kalman JM. Temporal stability of the atrial fibrillation cycle length in persistent human atrial fibrillation and its relationship to drivers: a high density epicardial mapping study. Heart Rhythm, 2015;12:5; (PO04-119)

McLellan A, Prahbu S, Voskoboinik A, Wong MC, Walters TE, Pathik B, **Morris GM**, Nisbet A, Lee G, Morton JB, Kalman JM, Kistler PM. Pulmonary vein and posterior left atrial wall isolation for persistent atrial fibrillation - the role of adenosine in restoring dormant posterior wall conduction. Heart Rhythm, 2015;12:5; (PO03-94)

Walters TE, Tan, G, Nisbet AM, **Morris GM**, Mearns M, Halloran K, Teo E, Ng A, Joseph S, Morton JB, Zentner D, Kistler PM, Kalman JM. Evolution of left atrial reservoir function

in human AF: hypertension and obesity are key drivers of change. Heart Rhythm, 2015;12:5; (PO03-93)

Walters TE, Lee G, **Morris GM**, Spence S, Larobina M, Atkinson A, Antippa P, Goldblatt J, Royse A, O'Keefe M, Sanders P, Morton JB, Kistler PM, Kalman JM. Temporal stability of rotors and atrial activation patterns in persistent human atrial fibrillation: a high density epicardial mapping study. Heart Rhythm, 2015;12:5; (PO03-32)

Walters T, **Morris GM**, Madry A, Spence S, Larobina M, Atkinson V, Goldblatt J, Lee G, Kalman JM. Comparison of wavefront mapping and phase mapping in the analysis of atrial activation patterns in human atrial fibrillation: an epicardial mapping study. Heart Rhythm, 2014;11:5, S495 (PO06-53)

Choudhury M, D'Souza A, Billeter-Clark R, Dobrzynski H, Boyett MR, **Morris GM**. Functional and molecular comparison of subsidiary right atrial pacemaker tissue to the sinoatrial node. Circulation 2013;128:A13052

D'Souza A, Bucchi A, Johnsen A, Monfredi O, Logantha S, Prehar S, Hart G, Cartwright E, Wisloff U, Dobryznski H, DiFrancesco D, Boyett MR*, **Morris GM*.** *Joint senior authors. Downregulation of HCN4 and the pacemaker current (If) underlies exercise training-induced sinus bradycardia. Circulation, 2013;128:A11048

**Morris GM**, Kingston PA, Dobrzynski H, Lei M, Robinson RB, Boyett MR. Differential effectiveness of HCN Isoforms as a biopacemaker in a model of sick sinus syndrome. Circulation. 2011;124:A10129

**Morris GM,** Kingston PA, Dobrzynski H, Lei M, Robinson RB, Boyett MR. The differential effectiveness of HCN isoforms for biopacemaking as a potential therapy for sick sinus syndrome. Eur Heart J. 2011;32 (suppl 1):997
Monfredi O, Johnssen AB, **Morris GM**, Dobrzynski H, Wisloff U, Boyett MR. Is athletic training-induced bradycardia caused by a downregulation of the Ca2+ clock pacemaker mechanism in the sinoatrial node? Eur Heart J. 2011;32 (suppl 1):996

**Morris GM**, Kingston PA, Dobrzynski H, Lei M, Robinson RB, Boyett MR. Characterisation of the cellular electrophysiology of subsidiary right atrial pacemaker tissue, and its utility for biopacemaking via the chimaeric pacemaker channel HCN212. Circulation. 2010; 122: A14399

**Morris GM**, Kingston PA, Dobrzynski H, Lei M, Robinson RB, Boyett MR. A cardiac biopacemaker created by acceleration of a subsidiary pacemaker via adenovirus mediated expression of a chimaeric pacemaker channel, HCN212. Eur Heart J. 2010;31(suppl 1):77

**Morris GM**, Dobrzynski H, Lei M, Robinson RB, Boyett MR, Kingston PA. Accelerated Activity of a Subsidiary Cardiac Pacemaker Induced by Adenovirus-Mediated Expression of a Chimeric Pacemaker Channel, HCN212 Hum Gene Ther. 2010;21:506

**Morris GM,** Innasumuthu L, Fox JP, Perry RA. The association of valve disease and a dominant left coronary circulation. Eur Heart J. 2009;30 (Abstract Supplement):682

**Morris GM,** Kingston PA, Dobrzynski H, Lei M, Boyett MR. Adenovirus-mediated transgene expression in the sinus node and development of a bradycardic model for the in vitro study of biopacemaking in sick sinus syndrome. Proc Physiol Soc. 2007;8:PC36

Innasimuthu AL, **Morris GM**, Fox JP, Perry RA. Left dominant coronary arterial system in aortic stenosis: an association, cause or effect? Heart. 2007;93:A39

## Other Abstracts

D'Souza A, Bucchi A, Johnsen A, Monfredi O, Logantha S, Prehar S, Hart G, Cartwright E, Wisloff U, Dobryznski H, DiFrancesco D, **Morris GM*,** Boyett MR*. *joint senior authors. Electrophysiological remodelling of key pacemaker mechanisms underlies endurance-training induced resting bradycardia. IUPS. Birmingham, 2013

Salih Z, **Morris GM**, Wynn GJ, Brown B, Wright DJ, Zaidi A. Setting the standard; Proposed national radiographic diagnosis reference levels for biventricular device implantation. HRC. Birmingham, 2013

**Morris GM**, Kingston PA, Dobrzynski H, Lei M, Robinson RB, Boyett MR. The funny current can be used to create a biological pacemaker by enhancement of the pacing rate of subsidiary pacemaker tissue in a model of sick sinus syndrome, but the effectiveness of different HCN isoforms markedly differs. HRC. Birmingham, 2011 (oral)

**Morris GM**, Kingston PA, Dobrzynski H, Lei M, Robinson RB, Boyett MR. Biopacemaking with a chimeric HCN channel. European working group on cellular cardiac electrophysiology. Cologne, 2009

**Morris GM,** Kingston PA, Dobrzynski H, Lei M, Boyett MR. Sinus node biopacemaking with HCN channels. Northern cardiovascular research group meeting. Leeds, 2009

**Morris GM,** Kingston PA, Dobrzynski H, Lei M, Boyett MR. Adenovirus-mediated transgene expression in the sinus node, and development of a bradycardic model for the in vitro study of biopacemaking in sick sinus syndrome. Northern cardiovascular research group meeting. Liverpool, 2008

**Morris GM,** Innasumuthu L, Fox JP, Perry RA. The association of valve disease and a dominant left coronary Circulation. Northern cardiovascular research group meeting (oral). Liverpool, 2008

**Morris GM**, Kingston PA, Dobrzynski H, Lei M, Boyett MR. Early experiences with Sinoatrial Node tissue culture. Northern cardiovascular research group meeting, Manchester, 2007

## Grants

Manchester Academic Health Sciences Centre, Step Up Grant. **Morris GM (PI).** 2015-2016. £6,000.

British Heart Foundation Project Grant: Molecular mechanisms underlying exercise training-induced arrhythmias. Boyett MR (PI), **Morris GM (Col)**. *£177,684*; 2014 – 2017. PG/14/24/30626.

British Heart Foundation Project Grant: Use of If blockade to assess the contribution of sinoatrial node electrical remodeling to the resting bradycardia of endurance athletes - potential insights into the aetiology of acquired sick sinus syndrome. **Morris GM (PI).** *£28,720*; 2014 - 2016. PG/13/99/30233

British Heart Foundation Travel Fellowship: High-resolution mapping of human atrial fibrillation waves; insights into mechanisms of persistent atrial fibrillation. **Morris GM (fellow)**. *£75,000*; 2013 - 2014. FS/13/31/30189

British Heart Foundation Clinical Research Fellowship: Biopacemakers for sick sinus syndrome, new targets. **Morris GM (PI).** *£167,000*; 2011- 2014 FS/12/10/29265

British Heart Foundation Project Grant (Co-applicant): Effect of athletic training on the cardiac conduction system, ups and downs. Boyett MR (PI), **Morris GM (CoI).** *£260,000*; 2010-2013. PG/10/031/2833

British Heart Foundation Clinical Research Fellowship: Gene expression in the pacemaker of the heart, the sinoatrial node. **Morris GM (fellow)** *£153,000*; 2006 – 2009. FS/06/058

## Clinical Trials

2015 - present. **CAAN-AF**. Site PI (Central Manchester Foundation Trust). Comparing AV node ablation and medical management of patients with atrial fibrillation and a biventricular pacemaker.

2013 - present. **ATTEST** (Atrial fibrillation progression trial). Site co-investigator (University Hospital of South Manchester). Impact of catheter ablation vs medical treatment on AF progression. Clinical trial number NCT01570361

2013 - present**. PRECISION GOLD**. Site co-investigator (University Hospital of South Manchester). The incidence of asymptomatic cerebral emboli following ablation with a new PVAC catheter. Clinical trial number NCT01767558.

## Selected invitations and presentations

2015. **Asia Pacific Heart Rhythm Society Congress, Melbourne, Australia**. Invited speaker on sinoatrial node disease and heart rate adaptation in athletes
2015. **British Heart Rhythm Society Congress, Birmingham**. Invited speaker on sinoatrial node disease and session chair basic science for clinicians.
2014. **Newcastle University Australia**, invited symposium speaker
2014. **University of New South Wales,** invited symposium speaker

## Positions held

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|---|---|
| 2015 - present | Consultant in Cardiac Electrophysiology and Devices, CMFT |
| 2014 - present | Honorary Clinical Lecturer, University of Manchester. |
| 2014 - 2015 | Cardiology Registrar, North West Deanery. |
| 2013 - 2014 | Cardiac Electrophysiology Fellow, Royal Melbourne Hospital. |
| 2013 - 2014 | British Heart Foundation Travelling Research Fellow, University of Manchester. |
| 2012 - 2013 | Cardiology Registrar, North West Deanery. |
| 2009 - 2013 | Honorary Research Associate, University of Manchester. |
| 2011 - 2012 | Cardiology Registrar, North West Deanery. |
| 2009 - 2011 | Cardiology and Medical Registrar, North West Deanery. |
| 2006 - 2009 | British Heart Foundation Clinical Research Fellow, PhD programme University of Manchester. |
| 2005 - 2006 | Cardiology Senior Clinical Fellow, Aintree Hospital NHS Trust. |
| 2002 - 2005 | Medical Senior House Officer, Salford Royal NHS Trust |

2001 - 2002 Medical and Surgical House Officer, University Hospital of South Manchester NHS Trust and Salford Royal NHS Trust.

## Audit

2013 Implantable device complications, University Hospital of South Manchester
2012 Radiation dose and screening time for biventricular devices, University Hospital of South Manchester, Manchester Royal Infirmary, Liverpool Heart and Chest Hospital

## Teaching and Management

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| 2015 December | Arranger and Chair of Health Education North West Cardiac Electrophysiology registrar training day. |
| 2015 - present | PhD supervisor, Moinuddin Choudhury (writing up) |
| 2015 - present | Cardiac Electrophysiology MDT lead. |
| 2015 - present | Cardiac Electrophysiology link for devices and heart failure MDT. |
| 2015 - present | Designated medical practitioner for supervision and assessment of nurse prescribing training. |
| 2015 - present | Operational lead for Manchester Heart Centre junior doctors. |
| 2015 - present | Member of Manchester Heart Centre education team. |
| 2012 - present | PhD student supervision and grant budget management. |
| 2010 - 2014 | Arranger and Chair of Health Education North West registrar teaching day ‘Academia in Medicine’. |
| 2010 - 2013 | Arranger and Chair of Health Education North West Health Education North West ‘Essentials of clinical cardiac electrophysiology’ registrar training day. |