CONTENTS

INTRODUCTION ......................................................................................................................................... 2
LIST OF STAFF ............................................................................................................................................ 3
RESPONSIBILITIES AND ACTIVITIES OF STAFF ........................................................................................... 4

Professor Alison D Murray.................................................................................................................... 4
Professor Alan R Denison ......................................................................................................................... 4
Dr Gabriella Baio ................................................................................................................................... 5
Professor David J Lurie .......................................................................................................................... 5
Dr Gordon D Waiter ................................................................................................................................ 6
Professor Andy Welch ............................................................................................................................... 6
Dr Timothy Smith ................................................................................................................................... 6
Dr Hugh Seton ...................................................................................................................................... 6
Dr Jiabao He ....................................................................................................................................... 6
Mrs Beverly MacLennan ........................................................................................................................... 7
Mrs Nichola Crouch ................................................................................................................................ 7
Mrs Katrina Klaasen ................................................................................................................................. 7
Miss Laura Reid .................................................................................................................................... 7
PhD STUDENTS .......................................................................................................................................... 8
CITATION REPORTS ................................................................................................................................. 11
PUBLICATIONS ......................................................................................................................................... 12
PRESENTATIONS ...................................................................................................................................... 15
INVITED LECTURES .................................................................................................................................. 17
AUDIT ...................................................................................................................................................... 17
PUBLIC ENGAGEMENT ............................................................................................................................ 17
CURRENT GRANTS ................................................................................................................................... 18

Prepared by Mrs Teresa Morris
Imaging Facilities Co-ordinator
Aberdeen Biomedical Imaging Centre
March 2017

Approved by Professor Alison D Murray
Roland Sutton Chair of Radiology
Aberdeen Biomedical Imaging Centre
March 2017
INTRODUCTION

The Aberdeen Biomedical Imaging Centre is the overarching structure to facilitate communication and synergy across the many scientists and clinicians working in imaging research at the University of Aberdeen. This multidisciplinary group of imaging researchers includes radiologists, medical physicists, computer scientists, biologists, bioengineers, chemists and radiographers, supported by administrative and secretarial staff, who are key members of the team.

2016 continued to see changes in the structure of the College of Life Sciences and Medicine, in which the School of Medicine has grown to encompass Medical Sciences and Nutrition. All staff in ABIC were formerly line managed within the Division of Applied Medicine and this has changed to Institute of Medical Sciences and Academic Line Managers have been appointed to manage groups of up to 15 staff.

During 2016 a series of discussions with NHS Grampian took place over the replacement of the cyclotron, and it was agreed that the NHS would take over the maintenance, technical staff and replacement programme from October 2016, with the formal staff TUPE transfer agreements expected in early 2017. The University retains ownership of the radiochemistry laboratories’ equipment and some of the finer details on management have still to be decided.

The University has an excellent portfolio of clinical and volunteer MRI research on the Philips 3T system but in the forthcoming two years it will be necessary to consider its upgrade or replacement by end of 2018.

Staff compliment in 2016 remained relatively static, although there were changes of staff. The Superintendent Radiographer, Mrs Baljit Jagpal resigned in January 2016 to take up a post in Dundee and Ruth Valentine, Project Manager for the STRADL study, resigned in April 2016, although she returned to assist with the project testing for 3 days per week from June. Mrs Bev MacLennan was appointed to the superintendent radiographer position as of April and we were fortunately enough to secure temporary staff help from Muriel Cockburn, a very experienced radiographer, over the summer period while a full-time replacement to Bev’s radiographic post was appointed. We were pleased to welcome Laura Reid, a radiographer from NHS Fife in September. A full-time project manager post for STRADL was advertised over the summer and Tina Habota, a clinical psychologist was appointed and also commenced in September. In November however, it was with regret that Dr Gabriella Baio resigned from her post to return to Italy as of April 2017. It is hoped that this post will be advertised and filled during 2017.

This year continued to be a productive one for PhD students, many of whom graduated during 2016 and moved to research fellow posts. Four new students started their PhD journey in October 2016 maintaining a student compliment of 14 at the end of December 2016. In addition, the Lilian Sutton Building hosted 2 summer students for short projects during the summer and further information is noted under the student section. These projects provided excellent opportunities for training in the value of brain imaging, beyond the familiar clinical use.

A further public engagement event for the Aberdeen Children of the 1950’s cohort took place on 20th February 2016, many of whom have been called in for participating in the testing phase of the Wellcome Trust funded grant “Stratifying Resilience and Depression Longitudinally (STRADL)”. Further details on the event, which was a great success, can be found here http://www.abdn.ac.uk/birth-cohorts/reunion/.

Two European Commission funded Horizon 2020 grants commenced in 2016. Professor David Lurie’s grant “IDentIFY” started in January 2016 and is a 6.6million euro 4-year grant to develop the next-generation of MRI scanners (fast-field cycling) designed to identify key diseases, such as osteoarthritis, cancer and dementia, involving nine teams spanning six countries. Professor Matteo Zanda’s grant “PET3D” commenced in June 2016. This 3.9million euro innovative training network consortium has a vision to produce much needed translational researchers in PET. To achieve this, six leading academic institutions, all with fully equipped PET Centre’s on site, and two strategically chosen non-academic institutions have been brought together as beneficiaries in this 4 year ITN.

Dr Gordon Waiter was successful in obtaining funding from the Royal Society of Edinburgh to attend an international research collaboration visit on diffusion MRI data analysis in Taiwan, arranged via SINAPSE.
visit has subsequently developed into a small research project which is supported by the Roland Sutton Academic Trust.

ABIC continues to be a part of SINAPSE (Scottish Imaging Network: A Platform for Scientific Excellence) and 2016 saw infrastructure development with procurement of Scotland’s first PET-MR system (Edinburgh) and Scotland’s first 7 Tesla (7T) clinical MRI scanner (Glasgow). The 2016 Annual Scientific Meeting was hosted by University of Stirling on 17 June 2016 and the Keynote Speaker, Dr Jon Simons from the University of Cambridge, gave an interesting lecture showcasing his neuroimaging work on memory, elegantly combining basic cognitive neuroscience research with applications in clinical populations. This was also be the last ASM with Dr Dave Wyper as Director as he steps down in 2017, however we are delighted that Professor Alison Murray takes on the Director’s role as of April 2017.

This annual report lists the staff, the grant income, current projects, publications and presentations over the past year. Further information can be found at http://www.abdn.ac.uk/ims/research/abic.

**LIST OF STAFF**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor Alison D Murray</td>
<td>- Roland Sutton Chair of Radiology</td>
</tr>
<tr>
<td>Dr Gabriella Baio</td>
<td>- Clinical Senior Lecturer in Radiology</td>
</tr>
<tr>
<td>Professor Alan R Denison</td>
<td>- Personal Professor in Radiology</td>
</tr>
<tr>
<td>Dr Leela Narayanan</td>
<td>- Honorary Clinical Senior Lecturer in Radiology</td>
</tr>
<tr>
<td>Professor Thomas W Redpath</td>
<td>- Emeritus Professor of MRI Physics</td>
</tr>
<tr>
<td>Professor Peter Sharp</td>
<td>- Emeritus Professor of Medical Physics</td>
</tr>
<tr>
<td>Professor David Lurie</td>
<td>- Professor</td>
</tr>
<tr>
<td>Professor Andy Welch</td>
<td>- Professor</td>
</tr>
<tr>
<td>Dr Alim Yucel-Finn</td>
<td>- SCREDS Clinical Lecturer in Radiology</td>
</tr>
<tr>
<td>Dr Gordon Waiter</td>
<td>- Senior Lecturer</td>
</tr>
<tr>
<td>Dr Tim Smith</td>
<td>- Senior Research Fellow</td>
</tr>
<tr>
<td>Dr Jiabao He</td>
<td>- Lecturer in MR Physics</td>
</tr>
<tr>
<td>Dr Trevor Ahearn</td>
<td>- Honorary Lecturer</td>
</tr>
<tr>
<td>Dr Hugh Seton</td>
<td>- Lecturer</td>
</tr>
<tr>
<td>Dr Lutz Schweiger</td>
<td>- Senior Research Fellow &amp; Senior Radiochemist</td>
</tr>
<tr>
<td>Dr Vesna Vuksanovic</td>
<td>- Research Fellow</td>
</tr>
<tr>
<td>Dr Ian Fleming</td>
<td>- Research Fellow (appointed to Lecturer (Scholarship) November 2016)</td>
</tr>
<tr>
<td>Dr Anca Sandu-Giuraniuc</td>
<td>- Research Fellow</td>
</tr>
<tr>
<td>Dr Gareth Davies</td>
<td>- Research Fellow</td>
</tr>
<tr>
<td>Dr Lionel Broche</td>
<td>- Research Fellow</td>
</tr>
<tr>
<td>Dr Chris McNeil</td>
<td>- Research Fellow</td>
</tr>
<tr>
<td>Dr Tina Habota</td>
<td>- Research Fellow (joined September 2016)</td>
</tr>
<tr>
<td>Dr Nicola Miller</td>
<td>- Honorary Research Fellow</td>
</tr>
<tr>
<td>Mr George Cameron</td>
<td>- Senior Research Assistant</td>
</tr>
<tr>
<td>Mr James Ross</td>
<td>- Research Fellow</td>
</tr>
<tr>
<td>Mr Marco Mingarelli</td>
<td>- Research Assistant</td>
</tr>
<tr>
<td>Mr Gordon Buchan</td>
<td>- Research Technician (MRI)</td>
</tr>
<tr>
<td>Mr Stuart Craib</td>
<td>- Research Technician (PET)</td>
</tr>
<tr>
<td>Dr Giovanni Cacchione</td>
<td>- Research Technician (PET)</td>
</tr>
<tr>
<td>Ms Eleanor Hutcheon</td>
<td>- Technician</td>
</tr>
<tr>
<td>Mrs Baljit Jagpal</td>
<td>- Lead Superintendent Radiographer (left January 2016)</td>
</tr>
<tr>
<td>Mrs Beverley MacLennan</td>
<td>- Radiographer (promoted to Lead Superintendent Radiographer April 2016)</td>
</tr>
<tr>
<td>Mrs Nichola Crouch</td>
<td>- Radiographer</td>
</tr>
<tr>
<td>Mrs Katrina Klaasen</td>
<td>- Radiographer</td>
</tr>
<tr>
<td>Ms Laura Reid</td>
<td>- Radiographer (joined September 2016)</td>
</tr>
<tr>
<td>Mrs Nicola Irwin</td>
<td>- Radiopharmacy technician</td>
</tr>
<tr>
<td>Mr Mike Shek</td>
<td>- Radiopharmacy technician</td>
</tr>
<tr>
<td>Ms Bolanle Awote</td>
<td>- Honorary Research Nurse</td>
</tr>
</tbody>
</table>

Ms Laura Reid
Mrs Ruth Valentine - Honorary Research Nurse
Mrs Teresa Morris - Imaging Facilities Co-ordinator
Mrs Dawn Younie - Secretary
Vacant - Receptionist

RESPONSIBILITIES AND ACTIVITIES OF STAFF

Professor Alison D Murray
1. Generation Scotland Executive Committee, University of Aberdeen representative.
2. British Society of Neuroradiologists, Academic Subcommittee, Member.
4. MS Society, Grants Review Panel, member.
5. Medical Research Council, CASE Studentship Review Panel, member.
6. Scottish Health Sciences, University of Aberdeen Neurosciences lead.
7. Scottish Dementia Research Consortium, Executive member.
8. Alzheimer’s Research UK (Scotland) executive member
11. School of Medicine and Dentistry Disability Co-ordinator.
12. Aberdeen Biomedical Imaging Centre Executive Group, University of Aberdeen, Chair.
13. Radiology Committee, NHS Grampian, Member.
15. Radiology MRI Modality Group, NHS Grampian, Member.
16. Nuclear Medicine Service Committee, NHS Grampian, Member.
18. European Institute for Biomedical Imaging Research, Member and Aberdeen Biomedical Imaging Centre representative.

Professor Alan R Denison
1. Scottish Deans Medical Education Group, Member
2. Scottish Fitness to Practise Leads Group, Chair
3. Bursaries and Endowments Committee, University of Aberdeen, Member
4. NES Medical Education Awards Committee, Member
5. Scottish Clinical Leadership Fellow Scheme, Board Member
6. Academy of Medical Educators, Council Member
7. Education Associate, General Medical Council
8. Scottish Medical Education Research Consortium, Board Member
9. Education Leads committee, Medical Schools Council, Member
10. Quality Leads Network, General Medical Council, Member
11. Royal College of Radiologists Academic Committee, Member
12. Queens University Belfast, External Examiner
13. Institute of Education in Medical and Dental Sciences, University of Aberdeen, Deputy Director
14. Institute of Education in Medical and Dental Sciences, University of Aberdeen, MBChB Programme Lead
15. Institute of Education in Medical and Dental Sciences, MBChB Curriculum Steering Group, Chair
16. Institute of Education in Medical and Dental Sciences, Learning Technologies in Healthcare Education Group, Chair
17. Institute of Education in Medical and Dental Sciences Degree Examination Boards, Chair
18. Aberdeen Biomedical Imaging Centre Executive Group, University of Aberdeen, Member
19. Clinical Supervisor, NHS Grampian
20. Nuclear Medicine Service Committee, NHS Grampian, Member
21. PET Modality Group, NHS Grampian, Member
22. CT Modality Group, NHS Grampian, Member
23. Ultrasound Modality Group, NHS Grampian, Member
24. Radiology Senior Staff Committee, NHS Grampian, Member
25. Radiology Specialty Training Committee, NHS Grampian, Member
26. North of Scotland Lung Cancer Network, NHS Grampian, Member
27. Scottish Interstitial Lung Disease Network, NHS Grampian, Member

Professors Alison Murray and Alan Denison act as regent to 8 undergraduate medical students each, to whom they provide advice and support, as and when required by the students.

**Dr Gabriella Baio**

1. European Society of Molecular Imaging (ESMI), Member
2. European Society of Radiologist (ESR), Member
3. Journal of Molecular Imaging & Dynamics, Executive Editor
4. Journal of Molecular Imaging & Dynamics, Guest Editor
5. Reviewer for Molecular Imaging and Biology Journal; Breast cancer Research & European Radiology; Molecular Pharmaceutics
6. Aberdeen Biomedical Imaging Centre Executive Group, University of Aberdeen, Member
7. Radiology Committee, NHS Grampian, Member
8. Nuclear Medicine Service Committee, NHS Grampian, Member
9. Radiology MRI Modality Group, NHS Grampian, Member
10. Scottish Imaging Network: A Platform for Scientific Excellence (SINAPSE). Executive Committee, Member
11. NCRI Imaging Advisory Expert Panel, Member
12. National Cancer Research Institute, Imaging Advisory Expert Panel, Member

**Professor David J Lurie**

1. Institute of Physics, Fellow
2. Institute of Physics and Engineering in Medicine, Fellow
3. International Society for Magnetic Resonance in Medicine, Member
4. International EPR (ESR) Society, Member
5. Fellowship Panel, Institute of Physics, Member
6. Course Accreditation Panel, Institute of Physics and Engineering in Medicine, Member
7. Research Degrees Committee, University of the Highlands and Islands, Member
8. Academic Line Manager, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen
9. Northern Research Partnership Joint Research Institute in Medical Technologies, Deputy Director
10. Quality Assurance Committee, University of Aberdeen, Member
11. Aberdeen Biomedical Imaging Centre Executive Group, Member
12. Senatus Academicus, University of Aberdeen, Member
13. European Congress of Radiology, Physics in Radiology Subcommittee, Member 2014-2016
14. European Congress of Radiology, Physics in Radiology Subcommittee, Chair 2017 meeting
16. Aberdeen Centre for Arthritis and Musculoskeletal Health Steering Group, Member
17. European Congress of Radiology, Physics in Radiology Subcommittee, Member 2014-2016
18. European Congress of Radiology, Physics in Radiology Subcommittee, Chair 2017 meeting
19. European Congress of Radiology, Programme Planning Committee, Member for 2018 and 2019 conferences
20. Vice Chair of EU COST Action CA15209, “European Network on NMR Relaxometry” 2016-
22. Promotions panel for Greek universities, Member
Dr Gordon D Waiter
1. College of Life Sciences and Medicine Ethical Review Board (CERB), Deputy Chair
2. Institute of Physics, Member
3. Institute of Physics and Engineering in Medicine (MIPEM), Corporate member
4. Health and Care Professions Council (HCPC), Registered Clinical Scientist.
5. Aberdeen Biomedical Imaging Centre Executive Group, University of Aberdeen, Deputy Chair
6. Institute of Medical Sciences Safety Committee, University of Aberdeen, Member
7. MR Responsible Person, University of Aberdeen
8. Honorary Clinical Scientist and MR Safety Advisor, NHS Grampian
9. Biomedical Physics: MSc in Medical Physics, Magnetic Resonance Imaging (BP5503) course co-ordinator and lecturer, Medical Image Processing (BP5505) lecturer.

Professor Andy Welch
1. Institute of Physics and Engineering in Medicine, Corporate Member
2. NCRI PET Scanning Methodology Expert Panel, Member
3. Course Co-ordinator of the M.Sc./Pg.Dip. programmes in Medical Physics and Medical Imaging, University of Aberdeen
4. University of Aberdeen, Radiation Hazards Sub-committee, Chair
5. Scottish Imaging Network: A Platform for Scientific Excellence (SINAPSE). Executive Committee, Member
7. Aberdeen Biomedical Imaging Centre Executive Group, University of Aberdeen, Member

Dr Timothy Smith
1. Royal Society of Biology, Member
2. Chartered Biologist
3. Institute of Biomedical Sciences, Fellow.
4. Review board Harvard researcher initiated Bio-protocols, Member
5. Nuffield Research Placements, Project Supervisor

Dr Hugh Seton
1. Aberdeen Biomedical Imaging Centre Executive Group, University of Aberdeen, Member
2. MR Responsible Person for 4.7T preclinical MRI system, University of Aberdeen
3. Exams co-ordinator for MSc programmes in Medical Physics and Medical Imaging.
4. Musculoskeletal Programme Executive Group, Member

Dr Jiabao He
1. International Society for Magnetic Resonance in Medicine, Member
2. International Society for Magnetic Resonance in Medicine British Chapter, Member
3. European Society for Magnetic Resonance in Medicine & Biology, Member
4. Aberdeen Biomedical Imaging Centre Executive Group, University of Aberdeen, Member
5. Biomedical Physics: MSc in Medical Physics, lecturer.
6. Course Co-ordinator, MBChB Year 4 Student Selected Component, Institute of Medical Sciences, University of Aberdeen

All academic staff participate in the Personal Tutor Scheme for undergraduate students at the University of Aberdeen providing general support to students in matters such as achievement of the Graduate Attributes, Employability, Co-curricular opportunities and feedback as well as a pastoral support role.
The radiographic staff are actively encouraged to participate in departmental research and undertake continuing professional development.

Mrs Beverly MacLennan
1. MRI Lead Superintendent Radiographer, University of Aberdeen & NHS Grampian
2. NHS Grampian Key Handler for Moving & Handling
3. Aberdeen Biomedical Imaging Centre executive committee, University of Aberdeen, member
4. Radiology MRI Modality Group, NHS Grampian, member
5. Plain Film Orbit Reporting prior to MRI- referrer and reporting radiographer
6. Society of Radiographers, Professional Member
7. Health and Care Professions Council (HCPC), Registered Diagnostic radiographer
8. PgC Health Studies (Clinical Practice) University of Dundee
9. Undertaking PgC in Clinical Reporting, Canterbury Christchurch University, (expected to complete in June 2017)

Mrs Nichola Crouch
1. Research MRI radiographer, University of Aberdeen & NHS Grampian
2. Plain Film Orbit Reporting prior to MRI- referrer and reporting radiographer
3. Society of Radiographers, Professional Member
4. Health and Care Professions Council (HCPC), Registered Diagnostic radiographer
5. Undertaking MSc Imaging, University of Edinburgh (Expected to complete April 2017)
6. Radiology Contrast Group, NHS Grampian, member

Mrs Katrina Klaasen
1. Research MRI radiographer, University of Aberdeen & NHS Grampian
2. Plain Film Orbit Reporting prior to MRI- referrer and reporting radiographer
3. CPR Cascade Trainer – Adult, NHS Grampian
4. Society of Radiographers, Professional Member
5. Health and Care Professions Council (HCPC), Registered Diagnostic radiographer
6. Society of Radiographers Industrial Relations Representative
7. Acute Sector Partnership Forum, NHS Grampian, member
8. Society of Radiographers Representatives Forum for Scotland, member
9. Under taken training in cardiac volume analysis

Miss Laura Reid
1. Research MRI radiographer, University of Aberdeen & NHS Grampian
2. Society of Radiographers, Professional Member
3. Health and Care Professions Council (HCPC), Registered Diagnostic radiographer
PhD STUDENTS

Ms Maryam Alsyedalhashem undertook her viva voce in March 2016, graduated in June and is now working as a research fellow until June 2017 continuing to publish papers from her PhD work. Supervisors – Dr Gordon Waiter, Dr Trevor Ahearn and Professor Alison Murray.

Ms Dorota Chapko successfully defended her PhD thesis entitled “Life-course Determinants of Resilience to Cognitive Ageing: Empirical Evidence and Policy Implications” and as of 1 December 2016 is now employed as a research fellow supported by the Roland Sutton Academic Trust. Supervisors – Professor Alison Murray, Professor Corri Black and Dr Roger Staff.

Mr Matthew Firth submitted his thesis entitled “Experimental Cardiac Magnetic Resonance Imaging Methods for 31P Spectroscopy and passed his oral examination in September 2016, graduated in November and is now working for Aberdeen Radiation Protection Services. Supervisors - Dr Dana Dawson and Dr Hugh Seton.

Mr James Ross submitted his PhD thesis entitled “Speed-up Strategies for Field-Cycling MRI”. He went on to successfully defend his thesis in June 2016 and graduated in November 2016. He is now employed as a research fellow on Prof Lurie’s fast-field cycling EU project. Supervisors – Professor David Lurie, Dr Hugh Seton and Dr P Glover.

Mr Michael Stringer submitted his PhD entitled “Investigating the dynamic properties of functional brain networks: a multidisciplinary research project at the interface of physics, neuroscience and medical diagnostics” in 2016 and successfully defended his thesis in December. He is now working as a research fellow in Edinburgh. Supervisors - Dr Gordon Waiter (formerly Prof C Schwarzbauer) and Dr Mary Joan MacLeod.

Mr Glynn Jones has almost completed his 4 year PhD entitled “Structural and functional imaging biomarkers in models of Alzheimer’s disease”. He submitted his thesis in December 2016 and is awaiting his viva vice and currently applying for jobs. Supervisors – Professor Bettina Platt, Professor Gernot Riedel, Professor Andy Welch and Dr Hugh Seton.

Mr Nicholas Payne is in Year 4 of a PhD entitled “Quadrupolar relaxation-based methods in FFC MRI”. This will focus on the use of quadrupolar nuclear in fast field-cycling MRI (FFC-MRI). Quadrupolar nuclei in a sample (or patient) affect proton magnetisation when certain resonance conditions are met and this can be used as a further contrast within FFC-MRI. Supervisors – Professor David Lurie, Dr Lionel Broche and Professor Malcolm Levitt (Southampton).

Ms Su Myat Phyu is in her 4th Year of a PhD investigating molecular imaging of response of breast cancer cells to drugs targeting the PI3K/Akt/mTor pathway and optimised novel treatments for castration-resistant prostate cancer. Supervisor – Dr Tim Smith.

Mr Vasileios Zampetoulas is in Year 4 of a PhD entitled “Ultra-low field effects in Fast Field-Cycling MRI”. This project will focus on extending the range of magnetic field in very low (less than 10mT) and even zero values and exploring interactions between $^{14}$N and $^1$H in protein rich samples, double resonance phenomena in free radical containing solutions, and mapping of local magnetic fields that exist in fibres. Supervisors – Professor David Lurie and Dr Lionel Broche.

Miss Alexandra Andriu is in Year 3 of a PhD entitled ‘Evaluating the utility of αvβ3 integrin antagonist to detect and treat angiogenic tumour cells’. Alex has completed a very nice piece of work evaluating the utility of a novel PET radiotracer to report on αvβ3 integrin activity status and expression level in cancer cells. This is currently being written up for publication. Alex has just started a new part of the project, to investigate an experimental therapeutic designed to specifically target cancer cells that express αvβ3 integrin. Supervisors – Dr Ian Fleming and Professor Matteo Zanda.
Mr Joel Parkinson has completed his 3 year supervised period of his PhD entitled “Investigating the Effect of Physical Exercise on Functional Network Dynamics in the Human Brain” and is currently in his write-up phase. Supervisors – Dr Gordon Waiter and Professor Christian Schwarzbauer.

Mr Gabriel Cheung is in Year 2 of his PhD entitled “Development of Rapid IH Magnetic Resonance Chemical Shift Imaging Methods for Non-Invasive Measurement of Lactate in Heart and Breast Cancer”, which is supported with funding from Roland Sutton Academic Trust. Supervisors - Dr Jiabao He and Professor David Lurie.

Ms Clarisse de Vries is in Year 2 of her PhD entitled “Early Life Determinants of Brain Structural and Functional Connectivity and Relationship with Cognitive and Depressive Outcomes”. Supervisors – Professor Alison Murray, Dr Roger Staff and Dr Anca Sandu-Giuraniuc.

Ms Maria Goni is in Year 2 of her PhD study entitled “Towards a neuroimaging biomarker of fatigue in inflammatory disease” supported by the Jules Thorn Charitable Trust. Supervisors - Dr Neil Basu, Dr Gordon Waiter and Professor Alison Murray.

Mr Nick Senn is in Year 2 of his PhD entitled “Development of Non-invasive Advanced Diffusion Magnetic Resonance Imaging Method for Human Skeletal Muscle”. Supervisor – Dr Jiabao He & Professor David Lurie.

Miss Elena Hernandez Gerez commenced Year 1 of her PhD in October 2016 entitled ‘Mapping and Modelling Hypoxia in Spinal Muscular Atrophy’. The project will determine whether the fatal neurological symptoms of the common genetic disease, Spinal Muscular Atrophy (SMA) may be directly associated to general tissue hypoxia. Supervisors – Prof Simon Parsons & Dr Ian Fleming.

Dr Kirsten Laws commenced year 1 of an MD entitled ‘Hypoxia PET CT Imaging in Cancer’. The project will evaluate the utility of a two PET radiotracers to detect hypoxia in lung cancer and investigate the mode of action of these radiotracers to provide a better understanding of the factors that enable their retention in hypoxic cancer cells. Supervisors – Dr Ian Fleming, Prof Matteo Zanda and Dr Les Samuel.

Mr Shaun Stone commenced his PhD in October 2016 supported by funding from SINAPSE and IXICO entitled “Prediction Models of Dementia Risk from Brain MR Images and Proxies of Cognitive Reserve”. Supervisors: Prof Alison Murray, Dr Gordon Waiter and Dr Anca Sandu-Giuraniuc.

Ms Jennifer Waymont commenced her PhD in October 2016 entitled “Automated detection of brain lesions in the Aberdeen Children of the 1950s and analysis of lifecourse determinants” supported by University of Aberdeen Development Trust. Supervisors: Dr Gordon Waiter, Professor Alison Murray and Dr Chris McNeil.

Over the summer of 2016 we hosted two visiting students, both keen to be involved with the imaging and ageing research carried out in Prof Murray’s brain ageing group within the Aberdeen Biomedical Imaging Centre, and undertook short research projects.

Mr Yuan Ye Beh, a University of Aberdeen 4th Year medical student, worked with Dr Chris McNeil and Professor Murray for 6 weeks. During this Alzheimer’s Society funded summer studentship Yuan examined the links between levels of homocysteine (an amino acid linked to vascular disease) and brain pathology in the ABC1936 cohort. He found that an excess homocysteine in the blood was linked to increased rate of hippocampal atrophy, even when corrected for other vascular risk factors. Yuan has further developed these findings in the months following his summer studentship, and has now prepared a paper based on his findings.

Miss Lizi Hegarty, a 3rd year BA (Mod) Neuroscience student of Trinity College, Dublin worked with Professor Murray and Dr McNeil on an 8 week Medical Research Scotland funded project. Lizi’s project
examined the risk factors associated with brain MRI detected white matter lesions, and their consequences for cognitive function, in participants of the STRADL project. In her relatively short project, Lizi discovered exciting new data about gender differences in the influence of WMH on cognition, and found that the levels of certain types immune cells is linked to brain hyperintensity abundance. These discoveries have initiated a number of new research avenues that are now being explored.

These projects all provided excellent opportunities for training in the value of brain imaging, beyond the clinical use. In addition, the research performed had provided valuable pilot data and analyses for future research by core members of ABIC.
CITATION REPORTS

Professor Alison Murray
(h-index: 32)

Published Items in Each Year

Citations in Each Year

Professor David Lurie
(h-index: 20)

Published Items in Each Year

Citations in Each Year

Dr Tim Smith
(h-index: 20)

Published Items in Each Year

Citations in Each Year

Dr Gordon Waiter
(h-index: 19)

Published Items in Each Year

Citations in Each Year
PUBLICATIONS


Murray AD. A new biomarker classification system for AD, independent of cognition: Agnosticism is a start. Editorial Neurology 2016


Bayrak S, Hövel P, Vuksanović V. Modelling functional connectivity on empirical and randomised structural brain networks (submitted)


Sandu AI, Artiges E, Galinowski A et al. Amygdala and regional volumes in treatment-resistant versus non-treatment-resistant depression patients. - submitted December 2016.


Phyu SM, Tseng CC, Fleming IN, Smith TAD. Probing the PI3K/Akt/mTor pathway using 31P-NMR spectroscopy: routes to glycogen synthase kinase 3. Scientific Reports 6, 36544.


PRESENTATIONS


Beh YY, McNeil C, Staff RT, Murray AD. Homocysteine and hippocampal atrophy, cognitive performance and survival: a longitudinal study of non-demented elderly people. RCPE Medical Research Symposium for Doctors and Students in Training, 19 October 2016, Edinburgh.


De Vries CF, Staff RT, Waiter GD, Sokunbi MO, McIntosh AM, Murray AD. Sex differences in resting state fMRI brain fuzzy entropy. SINAPSE Annual Scientific Meeting 17th June 2016, Stirling.


Goni M, Basu N, Waiter GD, Murray AD. Structural brain changes in fatigue rheumatoid arthritis patients: a discriminative classifier of MRI data. SINAPSE Annual Scientific Meeting 17th June 2016, Stirling.

McNeil C, Cheung W, Murray AD. Investigating the relationship between subclinical inflammation and longitudinal white matter hyperintensity change in the Aberdeen 1936 Birth Cohort. SINAPSE Annual Scientific Meeting 17th June 2016, Stirling.


Macnab M; Staff RT; Mckiddie Fl; Denison A; Olson S; Ramage E; Straiton J; Baio G. Variation in bowel uptake during 18F-FDG PET imaging between patients with different cancer indications. WMIC, New York SEP 2016


Payne N.R., Broche L.M. and Lurie D.J., “A Q-switch system for an MRI RF coil operating at 2.5 MHz”, 8th SINAPSE Annual Scientific Meeting, Stirling, UK, June 2016.


INVITED LECTURES


Murray AD. Cognitive reserve: Implications for diagnosis and recruitment to clinical trials. The Lilly Centre for Collaborative Neuroscience, Erl Wood Manor, Surrey, 27 October 2016.

Murray AD. What questions can we answer with brain imaging in cognitive impairment and dementia? UK Radiology Congress, Liverpool, 7 June 2016.

Murray AD. An overview of imaging abnormalities in people with dementia. UK Radiology Congress, Liverpool, 6 June 2016.

Murray AD. What questions can we answer with brain imaging in cognitive impairment and dementia? Shadows Radiology annual meeting, Aberdeen, May 2016.

Waiter GD. Multi-modal Neuroimaging: The Aberdeen Perspective. Exchange visit to Advanced Biomedical MRI Lab, Institute of Medical Device and Imaging, National Taiwan University College of Medicine, May 2016.

Waiter GD. Report on Taiwan visit and diffusion MR image analysis collaboration. SINAPSE ASM, June 2016, Stirling.


AUDIT

Szeyi Lai S, McKiddie F, Murray AD. Non-oncologic indications for 18F FDG PET CT. This found that a positive diagnosis of large artery vasculitis (giant cell arteritis) using PET CT was associated with fewer future radiological investigations. 2016

PUBLIC ENGAGEMENT

CURRENT GRANTS


Zero-Field MRI to Enhance Diagnosis of Neurodegeneration **Lurie D, Broche L, Counsell CE, Murray AD, Riedel G.** EPSRC, £988,625 (FEC £1,247,106) 2013-2016.


Europe wide multicentre collaboration. Understanding food-gut-brain mechanisms across the lifespan in the regulation of hunger and satiety for health (Full4Health). **Murray AD, Waiter GW** (named collaborators), WP4. EU FP7: £1,794,071, 2011-2016.


Preclinical optimisation of targeted nanoparticles loaded with beta-emitting radionuclides for molecular radiotherapy. Smith TAD, McLaughlin AC, Trembleau L, Flux G. Chief Scientists Office (Scottish Government) £265,000 1/1/2017-31/12/2019.

Development of targeted nanoparticles loaded with beta-emitting nuclides for molecular radiotherapy. Smith TAD, McLaughlin AC, Trembleau L. TENOVUS-Scotland £11,300 1/7/2016-31/12/2017.

End of Report