Institution: University of Dundee
Unit of Assessment: UoA4 – Psychology, Psychiatry and Neuroscience
a. Overview

UoA4 of the University of Dundee returns staff from two research groups: the School of Psychology (College of Art and Social Sciences) and the Division of Neuroscience, located in the Medical Research Institute (MRI; Directors: Wolf, Belch, UoA1) of the School of Medicine (College of Medicine, Nursing and Dentistry; CMDN). The abundance of mental health problems in society drives translational research in the Unit. Our principal research aims are to:

- describe the development, expression and degeneration of psychological and relevant neural processes through research, informing educational and health service policy.
- elucidate mechanisms and pathways underlying cognition, language, mood and addiction and to exploit this knowledge to enable prevention and treatment of psychiatric disorders.

Addiction and Cognitive Development are the major research themes in Neuroscience (Directors: **Hales** (non-clinical), **Matthews** (clinical)), which comprises academic psychiatrists, psychological therapists, anaesthetists and non-clinical neuroscientists. The main research themes in Psychology (Director: **Harley**) are Language & Cognition, Human Development and Social Identity.

b. Research Strategy

The overarching theme linking the two elements of the submission and providing a common focus for the Unit is **Cognitive Development** (**Belelli**, **Bennett**, **Coghill**, **Connolly**, **Duncan**, **Harvey**, **Lambert**, **Matthews**, **Nagy**, **Steele**, **Willatts**). Recent strategic appointments (**Booth**, **Langston**, **Martin**, **Ross**) increase strength in this theme. Neuroscience has, in addition, developed the overlapping interdisciplinary theme of **Addiction** (**Baldacchino**, **Belelli**, **Irving**, **Kidd**, **Lambert**, **Matthews**), with the recruitment of **Hales** and **Steele**. Both themes are highly relevant in Scotland, where disorders of cognitive development and substance abuse and dependence are prevalent and of clear national and international importance. These programmes are informed by close links to the NHS (Tayside and Fife). Several staff members are engaged in clinical service; additionally, NHS clinicians have honorary academic appointments in Neuroscience.

Changes to the research environment over the assessment period: The School of Medicine was significantly restructured in 2011 with creation of the MRI, which includes four Divisions (Cancer, Cardiovascular & Diabetes Medicine, Population Health Sciences and Imaging & Technology) in addition to Neuroscience. The MRI provides support for research administration, finance management, core laboratory functions and animal facilities supporting rodent breeding. Neuroscience has strong cross-divisional links with Population Health Sciences (population-based addiction research) and with Imaging & Technology. Education in the School of Medicine is led by the Medical Education Institute (MEI).

In 2013 Neuroscience established the Behavioural Neuroscience Core Facility (managed by **Martin**), which provides rodent behavioural phenotyping to users within the Unit, in other University of Dundee colleges (primarily CLS) and outside the University. This facility has a sustainable fee-for-use-based business plan and is central to characterising rodent models relevant to the research themes and future translational strategy of the Unit. Neuroscience also established the Institute for Academic Anaesthesia (directed by **Hales**) with the goal of developing high quality research and education to improve anaesthesia and pain management. The developing pain initiative benefited from the recent appointment of Smith (Professor of Population Health Science) who studies the epidemiology of chronic pain. The interdisciplinary Pain Research Group includes **Hales**, **McLeod** (Honorary Reader in Anaesthesia), Smith and **Steele**. Addiction research activities are supported within the Centre for Addiction Research and Education Scotland (CARES) which brings together academic clinicians and basic scientists (**Baldacchino**, **Belelli**, **Hales**, **Irving**, **Kidd**, **Lambert**, **Matthews**, **Steele**) with NHS clinicians and managers from across Scotland.

Psychology has established two complementary research centres with communal language and vision laboratory resources. The Centre for Oculomotor Research (**Tatler**, **Vincent**, **Murray**, **Kamide**, **Van Gompel**) is designed for research on eye-movement during reading, language comprehension, perception, and cognition as studied using a variety of paradigms from laboratory to real world settings. The Language Research Centre (**Melinger**, **Harley**, **Kamide**, **Murray**, **Duncan, Van Gompel**) supports the investigation of psychological processes involved in language production and comprehension. Both centres are sustained by educational revenue generated by Psychology, with recent acquisition of new eye-tracking systems, a 32-channel EEG system as well as upgraded evoked response potential equipment to support research in the two centres.

Research groupings: Research staff in Neuroscience (Ninewells Hospital campus) can be grouped according to their research approaches: molecular and cellular neuroscience (**Belelli**, **Connolly**, **Hales**, **Harvey**, **Irving**, **Lambert**, **Schweiger**), behavioural neuroscience (**Langston**, **Martin**), clinical neuroscience and neuroimaging (**Baldacchino**, **Coghill**, **Kidd**, **Matthews**, **Steele, Swan**), the largest thematic grouping being Addiction. Studies of the mechanisms of alcohol (**Belelli**, **Lambert**), opioids (**Hales**) and cocaine (**Belelli**, **Lambert**) receive funding from the Medical Research Council (**Belelli**, **Lambert** with Sussex University) and the National Institute on Drug Abuse, USA (**Hales** with University of California in Los Angeles). **Belelli**, **Lambert** and **Hales** collaborate on a project investigating neural circuitry involved in the rewarding actions of opioids (Wellcome Trust Clinical PhD student **King**). The alcohol study (in collaboration with investigators in Sussex and London) revealed that mutations in $GABA_A$ genes are associated with increased alcohol consumption in mice (*Nature Communications*). The group also implicated inhibition mediated by specific $GABA_A$ subtypes of the striatum in the actions of cocaine. Clinical investigators **Matthews**, **Steele** and **Baldacchino** collaborate on studies of brain function in methadone-dependent patients (Industrial partners & Tenovus Scotland). This study (featured in the BBC series *Addicted to Pleasure*) revealed that methadone maintained patients exhibit a blunted response to reward and exaggerated responses to loss in a learning task, possibly in response to methadone maintenance therapy (http://www.youtube.com/watch?v=DTQWc6G3vwo).

An overlapping group of Neuroscience investigators falls within the Cognitive Development theme. **Lambert**, **Langston** and **Schweiger** study aberrant cognitive development in a mouse model of Huntington's Disorder in collaboration with the Drug Development Unit (CLS) and GlaxoSmithKline. This milestone-driven project identified cognitive abnormalities that may provide an early diagnostic approach. **Connolly** and **Harvey** collaborate on another cognitive development project (funded by the Biotechnology and Biological Sciences Research Council) investigating the effect of neonicotinoid pesticides on the bee nervous system. This was reported in *Nature Communications* and received international publicity (http://www.japantimes.co.jp/news/2013/03/29/world/pesticides-linked-to-bee-colony-collapse/).

Psychology is comprised of research groups in Language & Cognition (**Melinger**, **Potter**, **Harley**, **Kamide**, **Murray**, **Tatler**, **Van Gompel**, **Vincent**), Human Development (**Bennett**, **Booth**, **Duncan**, **Nagy**, **Ross**, **Willatts)** and Social Identity (**Sani**, **Hopkins**, **Bennett**, **Moore**). The main focus in Language & Cognition is on language comprehension and production (**Melinger**, **Harley**, **Kamide**, **Murray**, **Van Gompel**), perception (**Tatler**, **Vincent**), and attention (**Potter**, **Tatler**, **Vincent**). The focus of research in Human Development is on many aspects of cognition (**Bennett**, **Nagy**, **Ross**), executive function (**Booth**, **Willatts**), reading (**Duncan**), and reasoning (**Willatts**). Research on social identity focuses on how individuals' social relationships and behaviour may be influenced by their identification with social groups (**Sani**, **Hopkins**, **Bennett**) and on the evolution of social behaviour (**Moore**).

Research plans over the next five years: The Unit will maintain its focus on Cognitive Development, establishing strong, sustainable collaborations between the Neuroscience and Psychology groups with the aim of gaining interdisciplinary programme funding. Following the retirement of **Balfour** (Professor of Behavioural Pharmacology) there is an emphasis on building behavioural research capacity, reflected by investment in the Behavioural Neuroscience Core Facility and the recruitment of **Langston** and **Martin**. The next phase is recruitment of a Chair of Behavioural Neuroscience. Neuroscience will also continue to develop the Addiction theme, using School of Medicine "Grand Challenge" pump-priming awards to support a series of addiction workshops and symposia with an initial focus on illicit drug deaths to stimulate new collaborations

and research applications. The Unit has enlisted an external advisory group of leading international addiction specialists (Koob, USA; Robbins, Cambridge; Van den Brink, NL) and, having submitted a winning bid, will host the 2015 annual meeting of the International Society of Addiction Medicine. Neuroscience will develop the Pain theme, particularly in the context of opioid analgesic tolerance and dependence, which overlaps with addiction.

Over the next five years Psychology will build on strengths in Language and Cognition, Human Development and Social Identity; to that end it recently recruited early career researchers in these areas (**Booth**, **Moore**, **Ross**). A new chair of Clinical Psychology will be appointed in 2014. This recruitment will be coordinated with Neuroscience to develop cross Unit research collaboration.

Responsiveness to national and international priorities and initiatives: The Unit's research themes are aligned with healthcare and policy priorities. Major cities in Scotland have lower life expectancies than their counterparts in the UK/Europe in part due to psychiatric morbidity and illicit drug/alcohol-related deaths. These problems are also international priorities. The Unit's illicit drug death initiative (**Baldacchino**, **Kidd**) is therefore particularly relevant.

Another major activity within Neuroscience is the delivery of postgraduate training programmes to meet the Scottish and UK governments' agendas to improve the provision of psychological therapies. **Swan** and **Goodall** were involved in the drafting of the NHS Education Scotland 'Matrix' to support NHS Boards to commission and plan the effective delivery of evidence-based psychological therapy and both direct training programmes that supply NHS Scotland with its psychological therapy workforce, enabling Boards to meet access and treatment targets.

A focus on health-related issues is also evident in the Health in Groups project investigating how identification with different social groups affects health and well-being (**Sani** with NHS Tayside and Lothian; http://www.healthingroups.org). Also in Psychology, **Duncan** and **Potter** have responded to national literacy initiatives, working to develop language skills assessment tests for children. In line with the initiative "Right to speak", **Potter** secured Scottish Funding Council funds for postgraduate research training in augmentative and alternative communication. **Hopkins** co-authored a report on the future of identity in the UK as part of the UK Government's Foresight project, "Future Identities: Changing identities in the UK, the next 10 years" (funded by the Leverhulme Trust).

The development, promotion and dissemination of research: Evidence of grant writing and research dissemination is critical in the annual objective setting and review process, which is supported by mentoring schemes whereby senior colleagues advise and help early career researchers. The Unit adopts specific approaches to enhance non-academic impact. The Neuroscience academic lead for communications (**Langston**) and CMDN Communications Officer designed the Division's website to provide information about recent research activities, outreach and events, while the Psychology website (http://www.dundee.ac.uk/psychology/) highlights research in the Language Research Centre and the Centre for Oculomotor Research. In addition, research within the Unit which impacts on the assessment and management of severe and chronic treatment-refractory depression and obsessive-compulsive disorder is emphasised on the website of the Advanced Interventions Service (www.advancedinterventions.org.uk). Individual PIs in the Unit host other web resources including www.cys-loop.org (**Hales**), a site for the dissemination of research on neurotransmitter-activated ion channels (~15,000 visits; established with the support of the National Science Foundation, USA).

Neuroscience and Psychology hold regular seminars. In addition, students and postdoctoral fellows present at annual Student Symposia, host seminars and practice presentation skills. Funds are provided to invite speakers. Psychology holds research meetings to discuss funding calls, ideas for proposals and future projects. In Neuroscience such activities are supported on a thematic basis using "Grand Challenge" funds.

Evidence of interdisciplinary developments: A key interdisciplinary initiative is the above-mentioned Huntington's disease project (**Langston**, **Lambert**, **Schweiger**). In other interdisciplinary projects, **Steele**, **Coghill**, **Matthews** and **Baldacchino** combine clinical neuroimaging with experimental psychology and computational neuroscience, including machine learning, and **Baldacchino**, **Kidd** and **Matthews** lead clinical addiction projects exploiting Tayside and Scotland's long tradition of excellence in eHealth through the Health Informatics Centre, which

works on a cost recovery basis to support data linkage projects, manage a widely used research safe haven for the secure analysis of non-consented datasets and write bespoke software applications for research groups. **Baldacchino** collaborates with social scientists across Europe to improve responses to substance abuse and addiction.

Several interdisciplinary projects have developed within Psychology during the assessment period. A cross-disciplinary focus on health and well-being is evident in **Sani's** collaboration with medical practices in Italy and Scotland on social identity and health, **Vincent**'s work using 3D scans to identify breast tumours, **Duncan** and **Potter**'s work with Fife education to develop language tests for children and **Harley**'s research with MacAndrew (University of Abertay), Sykes-Little and Hunter (NHS) developing approaches to Parkinson's disease and aphasia based on manipulating language control processes. International collaborations include **Moore**'s with ecologists, immunologists and geneticists (Universities of Tartu, Estonia; Turku, Finland and Pretoria, South Africa) through which she explores social and biological underpinnings of complex behaviour. **Van Gompel**'s collaboration with computational linguists (Universities of Tilburg and Aberdeen) investigates the incorporation of referring expression into language generating computer systems.

c. People, including:

I. Staffing strategy and staff development

How the staffing strategy relates to your research strategy and physical infrastructure: The Unit has a policy of continuous recruitment at all levels, aiming to attract investigators with the potential for Fellowship funding. Recent recruitment added capacity to critical research themes across the Unit. Since 2008 Psychology appointed three Lecturers (**Ross**, **Booth** in Cognitive Development and **Moore** in Evolutionary Psychology). The recruitment to Neuroscience of **Hales** (Professor, Anaesthesia), **Steele** (Professor, Neuroimaging), **Langston** and **Martin** (Lecturers, Behavioural Neuroscience) has added further capacity during the assessment period. Upcoming professorial appointments in Clinical Psychology and Behavioural Neuroscience will be coordinated between Neuroscience and Psychology and will be targeted to boost mentoring for early career researchers and develop capacity for translational interdisciplinary research.

The Unit fully supports the key principles of the Concordat to Support the Career Development of Researchers and is dedicated to supporting the development of its research staff and postgraduate researchers. The University is recognised by the European Commission for its "HR Excellence in Research" as an environment that supports excellence and increases focus and impact. Its Organisational and Professional Development team (www.dundee.ac.uk/opd) provides workshops on writing, research funding, enterprise and presentation skills and offers coaching as well as career advice. The researcher development programme is mapped to the Vitae Researcher Development Framework and meets QAA Quality Code of Practice for Research Degrees programmes requirements and the Roberts recommendations on training for research staff and postgraduate researchers. The University's annual objective setting and review process encompasses all academics including PhD students, technical staff and postdoctoral fellows and involves annual meetings between individual staff and their academic line manager. This provides an opportunity for self-assessment, a review of progress and objective setting for the coming year.

The University of Dundee is an equal opportunities employer and is committed to the Athena SWAN charter. An application for the institutional bronze award is being prepared and a new University-wide position has been appointed to support this initiative. The strong support for equalities and diversity within the Unit is reflected by recent recruitment activity and it is working with this initiative to identify approaches for improving equality in the workplace.

Arrangements for the effective development and support of the research work of staff: The Unit has highly trained support staff. Research Portfolio Administrators in the School's Finance Team support grant preparation and post-award management. All proposals that exceed £100K are peer reviewed internally to support the Research Councils' strategy of demand management. Senior staff members offer junior staff individual feedback and assistance with grant and paper writing. Success is evident in the number of high quality research outputs from staff, exemplified by recent high profile publications in *Brain*, *PNAS* and *Nature Communications* as well as prestigious funding awards from Research Councils (**Connolly**, **Lambert**) and GSK (**Schweiger**).

Research career development of researchers: The University's Translational Medicine Research Strategy identifies future leaders of bioscience and health research. The development of close ties between basic scientists and practicing clinicians dovetails with the ethos of Tayside Academic Health Sciences Network, which has been established to create closer synergies between the NHS and the University, and has received pump priming funding from the Scottish Government. This incorporates the joint research infrastructure that supports clinical research. The Dundee Clinical Academic Track has been created to progress these aims, providing academic research opportunities for health professionals during career development. Conceived in 2009, it is now one of the best-developed clinical academic training schemes in the UK. The Unit participates in several schemes under its umbrella: the Wellcome Trust Clinical PhD Programme (Marshall, Cantrell, **Lambert**); Wellcome Trust Scottish Translational Medicine and Therapeutics Initiative; PsySTAR (**Matthews**, Marshall); and the SCREDS Clinical Lecturer Programme, recently restructured with formal approval, recruitment and appraisal processes. In response to needs identified in 2005 by the Royal College of Anaesthetists, the Institute for Academic Anaesthesia in Neuroscience provides an environment specifically developed to nurture academic anaesthetists.

CMDN prioritises the development of research opportunities, including the Dundee Academic Foundation Year Programme, the Selected Study Component in Laboratory Research, the Medical Student Research Society and INSPIRE, for academically-oriented medical students. New ventures include student-led Discovering Research events, a medical student research society (Dundee Research and Academic Medicine Society) and a programme of vacation studentships funded by a variety of sources (Dundee Cancer Centre, Muir Russell Trust, Medical Research Society, Pathological Society, Carnegie Trust and Wellcome Trust Student Elective Prize).

The role of clinical researchers: Several clinical researchers in Psychiatry (**Matthews**, **Coghill**, **Kidd**, **Baldacchino**, **Steele**) contribute to the Unit's research strategy in Cognitive Development and Addiction, while anaesthetists (**King**, **McLeod**) are integral to the developing focus on pain. The Unit is active in training these researchers; during the assessment period **Baldacchino**, **Kidd** and **Coghill** were developed as independent researchers in national priority areas (addictions, child and adolescent psychiatry) through mentoring and completion of Higher Research Degrees. The Unit will continue to nurture the development of clinical researchers in all areas.

Effective integration of clinical academics and NHS-employed active researchers: Translational research is supported by the close relationship between CMDN and the NHS in Tayside and Fife. Both NHS Boards have established Clinical Senior Lecturer positions in Addiction Psychiatry with permanent secondments to Neuroscience which, in turn, contribute resource to support two NHS Tayside clinical posts with important academic roles. NHS Tayside supports 2.5 FTE academic posts (one non-clinical) in Neuroscience. Neuroscience Clinical academics are strategic and clinical leads for Tayside Substance Misuse Services (**Kidd**), Fife Addiction Services (**Baldacchino**), the nationally-commissioned Advanced Interventions Service (**Matthews**) and the Tayside Developmental Psychiatry Service (**Coghill**). The Scottish Dementia Research Network is led by **Connolly** (Hon. Senior Lecturer) and **Matthews** is a member of the Management Board for the Scottish Mental Health Research Network. Psychological therapies research led by Neuroscience (**Swan**) involves a network of NHS collaborators and provides the context for the MSc in Psychological Therapy in Primary Care. Clinical academics are also integrated into the Unit's Institute of Academic Anaesthesia (**Hales**) which accommodates the research activities of **McLeod** (Honorary Reader) and a recently appointed Clinical Lecturer (Wellcome Trust Clinical PhD student: **King**) funded by the Scottish Clinical Research Excellence Development Scheme (SCREDS). A second SCREDS Lecturer in anaesthesia (**Bowness**) was appointed in 2013. CMDN and NHS Tayside have now established an Academic Health Sciences Network to align research, education and clinical activity across the two organisations. This initiative, which will strengthen translational research activity, has been supported by pump-priming funds from the Scottish Government, the University and NHS Tayside and will build on the model of collaboration developed by Tayside Medical Sciences Centre (TASC; www.tasc-research.org).

c. II. Research students

Effective and sustainable doctoral research training: The Unit's PhD community (34 students), funded by sources including the Research Councils, Wellcome Trust and other charities, is

integrated with postdoctoral staff and faculty. Each student in Neuroscience is mentored by one or more supervisor(s) and meets twice a year with a Thesis Monitoring Committee of three academics, which decides on transfer to PhD registration. The Unit has a strong track record of training clinical PhD students, recruitment being overseen by the Dundee Clinical Academic Track. Psychology hosts 17 of the Unit's research students, many supported by external bodies including the Research Councils and Scottish Imaging Network (SINAPSE), and has developed a programme to provide 3-4 new PhD students/year until 2020. Funding will preferably be secured externally, additional in-house resources, derived largely from teaching revenue, will be used to fund positions as necessary.

Key PhD programmes within the Unit are the national PsySTAR Clinical PhD Program for trainee psychiatrists and the Wellcome Trust Clinical PhD programme. In Psychology, **Potter** has recently raised support from the Scottish Funding Council for postgraduate training in augmentative and alternative communication. Attracted by the application of computational methods to psychiatric neuroimaging, Neuroscience has hosted three SINAPSE PhD students (Supervisors: **Steele**, **Matthews**) and recently developed a relationship mentoring two students with the Neuroinformatics and Computational Neuroscience Doctoral Training Centre in the Institute for Adaptive and Neural Computation (University of Edinburgh), a PhD programme for interdisciplinary research in neuroinformatics and computational neuroscience.

The Unit has a track record of CASE awards supporting PhD students in the Unit. Those in Neuroscience have included two which were completed during the assessment period (industrial partners Merck and Eli Lilly). Two current CASE students (Eli Lilly) are expected to submit in 2013.

d. Income, infrastructure and facilities

Research Income: Total income for UoA4 over the assessment period was £10,202,378. Income from specific bodies that fund health research was £193,821 over the assessment period, i.e. £13,008/submitted staff FTE (£12,114/headcount). This comprises income from the Chief Scientist Office (CSO) which was misallocated to BIS Research Councils in the HESA returns and therefore is not shown in the health research category in Ref4b. Excluding the CSO income, BIS Research Council income for the period was £2,474,940 equating to £166,103/FTE (£154,684/headcount).

During the assessment period, academics within Neuroscience attracted funding from a wide variety of agencies including the National Institutes of Health (**Hales**), National Science Foundation (**Hales**), Research Councils (**Lambert**, **Belelli**, **Matthews**, **Connolly**) and industry (**Lambert**, **Baldacchino**, **Coghill**, **Matthews**). Charity sponsors providing grants ≥£100K have included Wellcome Trust (**Lambert**), Tenovus Scotland (**Hales, Steele**), the Cunningham Trust (**Harvey**), the Garfield Foundation, the Mathew Trust and the PF Charitable Trust (**Hales** and **Lambert**). **Kidd** and **Matthews** have secured commissioned funding from local NHS Boards and Scottish Government to study and develop responses to suicide and other 'high risk' behaviours. Research in Psychology is also supported by major funders including Research Councils, Nuffield Foundation, the Leverhulme Trust and the Experimental Psychology Society.

Research infrastructure and facilities: In 2013, as part of a major restructuring, Neuroscience relocated into renovated contiguous accommodation housing offices, a seminar room, core research facilities and research laboratories for basic and clinical neuroscientists. The proximity of wet laboratory and office space occupying 1400 m^2 facilitates interactions between clinical and non-clinical academics. The facilities include a patient assessment room with video monitoring, three microscopy rooms (one confocal), three tissue culture rooms and a purpose built bee room. A dedicated Behavioural Neuroscience Core Facility was recently established (**Hales**, **Martin**) and is equipped for behavioural phenotyping with an emphasis on addiction and cognition, substantially increasing rodent behavioural phenotyping capacity.

Psychology also has excellent facilities, including cognition labs for behavioural experiments, environments for conducting interviews and participant observation and two infant laboratories, one for investigating neonatal imitation and communication, the other for research on infant problem solving. The Centre for Oculomotor Research has eight eye-tracking systems enabling investigation of various aspects of eye movements. The Language Research Centre has, in addition, a speech and gesture production laboratory and facilities for carrying out reaction time

experiments. Finally, Psychology has three electrophysiology labs housing EEG equipment for conducting research on attention, memory and music as well as intentionality in children.

Shared research infrastructure: The Unit benefits from research supported by Tayside Medical Sciences Centre (TASC), which was established in 2010, manages a >£7M annual budget and provides infrastructure to facilitate clinical research jointly with the NHS. TASC oversees the Clinical Research Centre (CRC), Clinical Imaging Centre, Tayside Clinical Trials Unit, Tayside Bioresource and Tayside Tissue Bank, providing a governance framework for clinical research. Academics in the Unit benefit from this infrastructure, particularly the CRC, which has *in vivo* PET and magnetic resonance imaging facilities. Its development, the recruitment of **Steele** and support from SINAPSE have enabled behavioural imaging in humans and provided an opportunity for cross-Unit collaborations combining EEG with functional magnetic resonance imaging.

The Health Informatics Centre provides expertise in bioinformatics, software development, high performance computing and statistics. High quality datasets and analysis are essential for research into drug deaths (**Baldacchino**, **Kidd**, **Matthews**), addiction treatment outcomes (**Baldacchino**, **Kidd**, **Matthews**) and opioid prescribing practices (**Baldacchino**, **Hales** and Smith). A £1.2M investment by CMDN funded eight additional programmers and a high performance computing infrastructure, enabling expansion of longitudinal datasets and data linkage with other agencies.

Policy and practice in research governance: Research is governed by a strong ethics code. Psychology's ethics committee reviews all research proposals; animal research is governed by a university ethics committee and the Home Office; and clinical research is governed by TASC.

e. Collaboration and contribution to the discipline or research base

Participation in the peer-review process: All staff review for major journals and most review for funding bodies including Research Councils and charities. Several staff members serve as editors.

Neuroscience: **Lambert** and **Belelli** are part of an MRC funded addiction cluster (with investigators in Sussex) and have MRC DPFS funding to develop novel glycinergic analgesics (with investigators in Liverpool); **Lambert** is a Fellow of the Royal Society of Edinburgh and was elected Fellow of the Royal College of Anaesthetists (2010); **Baldacchino** is NHS Fife Research and Development Director; **Coghill** is Clinical Investigator and Coordinator of an FP7 funded (€3M) multicentre project examining the chronic effects of drug use in ADHD (ADDUCE) and Chairs the European International ADHD Research Conference Network. He is Editor of the *Journal of Child Psychology and Psychiatry*; **Kidd** is Chair of the Scottish Government Drug Strategy Delivery Commission; **Matthews** is Advisor to NICE on Guidelines for OCD management, depression and vagus nerve stimulation and rTMS Technology Appraisals. He is Executive Psychiatric Advisor to the World Society for Stereotactic and Functional Neurosurgery and clinical advisor to the UK charity OCD Action. He has MRC funding for research on deep brain stimulation for the treatment of OCD (with investigators in London and Cambridge); **Hales** was named the George Washington University's Distinguished Researcher (2008), gave the Frederic Hewitt Lecture (Bronze Medal) and was elected FRCA (2012). He collaborates with University of California in Los Angeles investigators on a NIDA-funded project researching opioid tolerance and dependence. **Langston** received the European Brain & Behaviour Young Investigator Award (2011).

In Psychology: **Bennett** is Editor of *Infant & Child Development* and recipient (with Bannerjee, Sussex) of Research Council grants to investigate self-presentation in childhood; **Hopkins** collaborates on collective participation and identification with researchers in Allahabad, St Andrews, Lancaster and Limerick and worked with the Equalities and Human Rights Commission (Scotland) and the UK Government's Foresight Project; **Kamide** has ESRC awards investigating language and the visual world with Altmann (York) and Scheepers (Glasgow); **Nagy** has an ESRC grant examining neonatal psychology working with Liotti (Canada) and Orvos (Hungary); **Potter** is on the SINAPSE Executive Committee; **Sani** is funded by the ESRC to conduct a longitudinal, cross-cultural study on the relationship between group identification and health; **Tatler** held an ESRC award investigating scene perception and is an associate fellow of the Zentrum für Interdisziplinäre Forschung research group 'Competition and Priority Control in Mind and brain: New Perspectives from Task-Driven Vision', bringing together leading researchers in the field of vision and action.