Institution: University of Dundee

Unit of Assessment: 10 Mathematical Sciences

a. Overview

The UoA is composed wholly of staff from the Division of Mathematics and consists of thirteen active researchers. It contains thriving research groups in three areas of Applied Mathematics: Mathematical Biology (MB), Magnetohydrodynamics (MHD) and Numerical Analysis & Computational Mathematics (NACM). Each group is involved in applying mathematics to problems arising from other scientific disciplines in a dynamic, intra- and inter-disciplinary environment.

b. Research strategy

Following RAE2008, the strategic aims for the current REF period were to increase: (i) staff numbers, (ii) external research income, and (iii) research student numbers. These aims have all been met and surpassed with progress exceeding expectations as detailed below:

(i) The University has made substantial investment in the UoA that has led to a significant increase in the number of FTE staff, with each research group expanding through strategic appointments. In total, seven new academic appointments (of which, six Early Career Researchers (ECR)) have been made in the assessment period. In particular, the MHD group has doubled in size and the MB group is now one of the largest in the UK. New appointments have also led to the strengthening of the NACM group in areas of computational mathematics that complement and interact with the other research groups.

(ii) Over the current REF period the UoA has won total external research income in excess of £2M, a substantial improvement on the equivalent RAE2008 total (£1.17M). Moreover, the income per staff FTE for the current REF period was £29.1k pa, a factor 1.7 increase over that for the period RAE2008 period (£16.8k pa). This increase has been achieved by accessing a wide range of external funding sources (EPSRC, BBSRC, MRC, STFC, ERC [European Research Council], The Wellcome Trust, The Leverhulme Trust), with both significant individual awards (Chaplain, ERC AdG) and group (MHD STFC Consortium Grant) awards.

(iii) The increased activity of FTE staff over the REF period has resulted in an increase in the number of FTE research students: for the current REF period the total headcount is 102 FTE research students (an average of 17 p.a.) while the corresponding figures for the RAE2008 period was 54 (an average of 7.7 pa). A total of 12.5 degrees were awarded by 31 July 2013.

The vision of the UoA is to pursue research of the highest quality through the development of novel mathematics and innovative applications. Guided by this vision, the UoA aims to attract the best and most promising researchers and to train them within a dynamic, vibrant environment. Moreover, the UoA aims to apply mathematics to real-world problems through a challenge-based approach that necessitates the coordination of resources and knowledge across both different areas of mathematics and other scientific fields. Through the UoA's staffing, training and resource investment strategies, it will shape capability (by developing novel mathematics), produce leaders (by investing in people) and deliver impact (by investing in challenged-based ideas). The UoA's key strategic aims overlap those of the major external funding agencies (e.g. EPSRC, BBSRC, MRC, Horizon 2020), and align with those of the University of Dundee itself, whose 2013 *New Vision* has as its core "*transforming lives and working locally and globally through the creation, sharing and application of knowledge*".

Delivery of the UoA aims will be achieved by a targeted applicant-led recruitment strategy, further expansion of its international profile and the enhanced development of inter- and intra-disciplinary collaborations and ties with industry and business.

Staff expansion will be achieved through targeted recruitment and future Dundee Fellows scheme initiatives, with the UoA aiming to appoint a further 5-6 FTEs between 2014 and 2017. This expansion will focus on areas of mathematics cognate to the current research groups and will facilitate the formation of new groups that will benefit not only the UoA but also other research groups across the University. Specific areas targeted for expansion are applied analysis, stochastic systems and probability, and statistics (jointly with Barton, Bioinformatics).

Through the activities of its staff, the UoA already has a significant international profile. As a second key component of future strategy, this profile will be enhanced via their continued professional development, with particular emphasis placed on recently appointed ECRs. Building

on previous personal research fellowship success (**Chaplain, Janvier, Lin, Murray, Pontin, Wilmot-Smith**), all ECR staff (**Eftimie, Janvier, Kyza, Murray, Ptashnyk, Trucu**) will pursue applications to Personal Research Fellowships schemes such as those offered by The Royal Society, The Royal Society of Edinburgh, The Leverhulme Trust, EPSRC, and ERC. As a high priority to facilitate additional targeted investment in research strengths, other research staff will also target appropriate schemes (e.g. ERC Starting, Consolidator and Advanced Grants).

The UoA has already attracted considerable international research funding. For example, it has had success in obtaining EU funding through the FP6 and FP7 programmes (being part of two Marie Curie Initial Training Networks on cancer modelling, 2000-2004, 2004-2008) and more recently through a prestigious ERC AdG to **Chaplain**. In order to further enhance its international profile this expertise will be harnessed and re-focused to take advantage of new opportunities presented by ERC (e.g. Synergy Grants) and Horizon 2020 where *Health, Demographic Change and Well-being* and *Secure, Clean and Efficient Energy* have been identified as themes that are particularly relevant to the work of the UoA.

Intra-disciplinary activities between the MB, NACM and MHD groups are cemented within the operating procedure of the UoA. Moreover, developing the existing, strong inter-disciplinary collaborations between the UoA and colleagues in the Colleges of Life Sciences (CLS), Medicine/Dentistry/Nursing (CMDN), Ninewells Hospital and the James Hutton Institute (JHI) is a central component of future research strategy. Finally, the UoA will also seek to increase its current impact portfolio to a border spectrum of industry and business.

c. People:

i. Staffing strategy and staff development

Leading on from RAE2008, one of the major aims of the UoA was to continue to build on existing research strengths. The University carries out its own external, quinquennial assessment of the UoA's research activities (most recently in 2011 led by Prof. C. Elliott, Warwick; Prof. P.K. Maini, Oxford and Prof. C. Jones, Leeds), which advises it on research quality, priorities for appointments, and future research strategy. This committee recommended further investment in Mathematical Biology, complemented by appointments in Computational Mathematics. Hence the UoA staffing strategy has been to select young appointees in these areas with exceptional promise, and to provide an environment in which these academics can rapidly rise to international status. This strategy has proved successful, as evidenced by the recent appointments of five Early Career Research staff: **Eftimie, Ptashnyk, Murray** (MB), **Kyza** (NACM), and **Trucu** (working at the interface between MB and NACM, strengthening intra-disciplinary research activities). Moreover, the recent *Dundee Fellows* initiative targeted MHD as a priority area for strategic investment and has seen the UoA benefit from the appointment of **Janvier** to that group. With this appointment, together with that of **Wilmot-Smith** to a lectureship (2010), the MHD group has gained the critical mass that is vital for future STFC consolidated grant applications.

Career Development is an integral part of the University's Organisational and Professional Development unit that addresses the entire research lifecycle and aims to develop a complementary range of skills for academic staff, and increase their efficiency, experience, and effectiveness. The UoA itself has an excellent track-record in the career development of staff at all stages of their research careers.

All PDRAs are reviewed annually through the formal Objective Setting and Review (OSAR) process, thus providing guidance and structure to their career development. Evidence for the success of this programme is that **Wilmot-Smith** and **Trucu** were appointed to lectureships, having previously been a Research Fellow and a PDRA, respectively, in the UoA.

Each Early Career Researcher is mentored closely by a senior member of staff and provided with guidance in all facets of her/his research career, including grant construction and submission and the writing and submission of research papers. This careful mentoring process is proving to be highly successful, as evidenced by EPSRC First Grant awards to **Eftimie** and **Ptashnyk** (starting late 2013/early 2014). The ECR staff have also benefitted from the Northern Research Partnership Post-Doctoral and Early Career Researcher Exchange scheme, which provides support for international collaborations. **Eftimie, Trucu** and **Murray** have each received awards to work with colleagues in Canada, Germany and USA, respectively, that will provide further enhancement of their international profiles. Furthermore, **Ptashnyk** and **Eftimie** were each awarded a PhD

studentship from the University of Dundee DTA in recognition of their EPSRC First Grant success.

Each established member of staff is formally guided through the annual OSAR process and promotion is merit-based and actively supported. Evidence for this is that during the assessment period **Pontin, Davidson** and **Hornig** were appointed to Senior Lectureship, Readership and Personal Chair positions, respectively. **Chaplain** was appointed to the Ivory Chair in Applied Mathematics, the first time since 1995 that this honour has been awarded.

The UoA operates a system of differential teaching loads to protect the interests of active researchers and, in particular, newly appointed members of staff. Staff members are encouraged to attend conferences and to make and host research visits. Funding is available either from the UoA's resources, or from funds maintained by senior researchers. Additionally, a dedicated fund exists to provide support for all research students to attend conferences.

The University of Dundee officially launched the *Concordat to Support the Career Development of Researchers* in February 2009 and the UoA is engaged fully with the University's Concordat Action Plan. Progress achieved in this regard is evidenced by the recognition of the University by the European Commission for its *HR excellence in research*, an accolade granted to universities within the EU whose policies and processes demonstrate continued development of a working environment supporting research excellence and increasing focus and impact. The successful appointment of six new ECRs (four female), success in obtaining EPSRC First Grants (**Eftimie, Ptashnyk**), the UoA's mentoring scheme and OSAR process, and the promotion of existing research staff (see above) provides clear evidence that the UoA has implemented the Concordat and that it is firmly embedded within its research culture.

Several members of the UoA have been successful in obtaining personal research fellowships won in open competition: **Chaplain** was awarded an Advanced Investigator Grant from the European Research Council (ERC AdG) in 2008 (5-year funding, providing €1.69Million for three 5-year post-docs and 3 PhD students); **Janvier** was awarded a €120k, 2-year, AXA Research Fund Postdoctoral Fellowship in 2011; **Kyza** was awarded a 3-year fellowship of €150,000, co-funded by the European Social Fund–European Union and the National Resources of the Greek State, Operational Program *Education and Lifelong Learning* in 2012; **Lin** was awarded a Personal Research Fellowship from the Leverhulme Trust in 2009; **Eftimie** was awarded a MITACS Postdoctoral Fellowship (MITACS Postdoctoral Research Projects - Strategic Project Award), of $55,000, in 2010; **Murray** was awarded a 2-year Government of Ireland (IRCSET) postdoctoral fellowship, €78k, in 2012**; Pontin** was awarded a Philip Leverhulme Prize for Astronomy and Astrophysics, £70k, in 2011.

The UoA is highly cosmopolitan and attracts staff from across the international community: **Macklin** (USA) was appointed to a lectureship, 2009–2010 (he is now at the University of Southern California); **Eftimie** (joint Romania/Canada) was appointed to a lectureship, 2011; **Ptashnyk** (Ukraine) was appointed to a lectureship, 2011; **Kyza** (Cyprus), **Murray** (Ireland), **Trucu** (Romania), were appointed to lectureships, 2012; **Janvier** (France) was appointed to a lectureship, 2013. Concerning international recruitment in general, the following were appointed as PDRAs: **Huoyuan Duan** (China), 2008; **Trucu** (Romania), **Powathil** (India), **Kamei** (Japan) and **Yi** (South Korea), 2009; **Candelaresi** (Italy), 2013.

The UoA makes appointments on the basis of quality alone but is committed to equality and diversity, evidenced by the fact that four out of the six recent ECRs are female and that 40% of the total research staff are female. The UoA actively contributes to the College of Art, Science and Engineering's Athena SWAN self-assessment committee, which focuses on actions that will maintain and further enhance the UoA's inclusive culture and egalitarian working practices. Staff undertake mandatory training on equality and diversity, delivered through the online modules *Diversity in the Workplace*, *Disability*, *Stress in the Workplace* and *A Manager's Guide to Stress*. Staff who are involved in recruitment and selection of University staff complete a further module on Recruitment and Selection. Completion of the training programme is monitored centrally and the importance of the action is emphasised to staff by all levels of senior management in the School and the College.

ii. Research students

The UoA aims to further increase the size of its PhD cohort. The existing Mathematical Biology MSc is linked to the University's highly successful *3+1+1 Degree* programme in which strong

Chinese students complete both their final undergraduate and their Masters year in Dundee. The UoA will better exploit opportunities available through e.g. the China Scholarship Council, and pursue new agreements with other countries. Additional Masters programmes (Applied Mathematics, Financial Engineering) are in the process of development, with the intention that this will lead to an increase in PhD intake, including of students from the UK. The UoA will seek opportunities to bid for future initiatives such as Centres for Doctoral Training by working together with colleagues both in other Colleges within the University and in other institutions. The UoA takes a pro-active and creative approach to PhD recruitment. Over and above web-advertising (University, Facebook, LinkedIn), during the REF period research staff have participated in student mentoring schemes at conferences (ESMTB, SMB) and have supervised third- and final-year undergraduate students in schemes such as The Carnegie Vacation Scholarship and the International Genetically Engineered Machine (iGEM) Competition. These initiatives have directly led to PhD student recruitment in each of the research groups.

The UoA's procedures and practices for research students have been developed in line with the 18 indicators set out in the UK Quality Code for HE (Chapter B11: Research degrees). Supervision is governed by the University's *Code of Practice for Supervised Postgraduate Research*. All doctoral students are allocated one secondary supervisor in addition to their primary supervisor and, in the case of interdisciplinary research, further supervision from collaborating academics.

In their first six months of study all PhD students attend courses provided by the Scottish Mathematical Sciences Training Centre (SMSTC), an EPSRC funded consortium of the mathematical sciences departments of seven Scottish universities, to which Dundee is a contributing partner. SMSTC's prime aim is to provide high-quality broad training in areas of mathematics and statistics for beginning PhD students at a level comparable to that of first-year PhD courses in North America or mainland Europe. Teaching is by video-conference lectures in two semesters, running from October to April. Students also take part in two SMSTC Symposia in their first year, focusing on transferable skills and other generic research matters. Each research group in the UoA runs regular Journal Clubs and informal seminar series, at which research staff and PhD students meet to review recent work together. All research students are encouraged to attend relevant summer schools and workshops and to present their work at national and international conferences. The University's Library & Learning Centre delivers many short courses in areas such as presentation & communication, career development, entrepreneurship and teaching skills. Examples of relevant workshops are *Practical Presentation Skills for Researchers*, *Editing and Revising your Writing*, *Spin-out Companies*, *Intellectual Property and Commercialisation*, and *The Complete Researcher*. Bespoke training (e.g. in statistics) and occasional graduate school events (e.g. on discourse analysis in 2013) provide further opportunities for PGR development.

Each student has a Thesis Monitoring Committee, consisting of two academic staff other than the supervisors, that meets with the student every six months to discuss achievements, goals and individual development plans. This provides an opportunity to raise any concerns (e.g. regarding supervision or access to necessary resources) and contributes to a documented portfolio of the student's progress. Students can also seek guidance from the School's Postgraduate Advisor of Studies at any time. Students transfer formally to the PhD programme after their first year provided their progress is to the satisfaction of a Transfer of Ordinance Committee, with assessment based upon a report (including future plans), a presentation and an oral examination.

The quality of PhD education within the UOA is further evidenced by the fact of the 12.5 PhD students who graduated during the REF period, 11 have gone on to postdoctoral or university lectureship positions across the world (UK, Belgium, China, Denmark, Iraq, Malaysia, Saudi Arabia, Sweden, USA) and by research students' awards (e.g. the SIAM prize for the best student contributed talk at the British Applied Mathematics Colloquium, Leeds 2013 (Schlüter)).

d. Income, infrastructure and facilities

The UoA was relocated to purpose-built facilities adjacent to Life Sciences' Wellcome Trust Building (WTB) during the summer of 2008. This further enhanced inter-disciplinary activity, particularly in Mathematical Biology, which, in turn, played a role in the investment by the University in the new lectureship positions. However, due to the expansion in staff, PDRA, and student numbers, the UoA outgrew this space in 2012 and has now been relocated to a newly refurbished building. The new building has expansion room for future increases in staff, research

assistant and PhD student numbers. Shared research space for collaborative projects will also be available in the new £26M Centre for Translational and Interdisciplinary Research, which will open in January 2014 next to the WTB.

The UoA provides extensive ranges of computational software packages (IDL, NAG routines, MATLAB, FEMLAB/COMSOL, Maple and Mathematica) and books and journals (housed in the University's main library). The UoA also has several of its own multi-core computers (from **Chaplain's** ERC AdG and Royal Society Research Grants to **Pontin** and **Wilmot-Smith**) and has access to the HPC (High Performance Computing) in the College of Life Sciences. As a member of the UKMHD consortium, the MHD group has access to a 3,000 processor parallel computer for MHD simulations, funded by STFC and SRIF. The work of the UKMHD Consortium as a whole has been recognised by the Royal Astronomical Society with the Group Achievement Award in 2013. In addition, an MHD project is currently running on HECToR (the UK National Supercomputer).

Research funding during the REF period was substantial - over £2M in total. This has been achieved through grants to all research groups and from a broad portfolio of funders (EPSRC, BBSRC, Wellcome Trust, Leverhulme Trust, MRC, ERC, STFC), but with particularly large awards going to the MB group (**Chaplain**; ERC AdG) and MHD group (**Hornig, Pontin, Wilmot-Smith**; STFC Consortium Grant). While existing (funded) collaborations of **Chaplain** (e.g. Nathke, Weijer, Rocha, Thompson) and **Davidson** (e.g. Gadd, Stanley-Wall) will continue, this inter-disciplinary research strategy has already paid dividends with new collaborations funded through EPSRC First Grant schemes now in place between **Eftimie** and Weijer (CLS) and **Ptashnyk** and Bengough (JHI). **Chaplain** is currently working as a co-investigator with Thompson (College of Medicine) on a 5-year £850k *Breakthrough Breast Cancer* grant (started 1 October 2013) and will lead a bid for a collaborative European Training Network in early 2014. **Eftimie** and **Davidson** (the former has just been awarded a NRP Early Career Researcher Engagement & Exchanges with Business and Industry: *An Optimal Approach to Drug Design and Testing*) will engage in collaboration with Dr. H. Mistry from Physiomics Plc., with the goal of improving the development and testing of anti-cancer drugs. **Murray** has recently been awarded a grant from the BBSRC *Sparking Impact* scheme (£15k) to work with colleagues in CLS (Dale) to test predictions from mathematical models of somitogenesis in the lab.

Over the next few years, these collaborations are expected to lead to substantial inter-disciplinary grant proposals by all researchers to a range of external funding bodies (e.g. EPSRC, BBSRC, MRC, ERC, Wellcome Trust, Leverhulme Trust, Breakthrough Breast Cancer, CRUK, STFC). The UoA will also work closely and develop new collaborations with the newly formed Division of Computational Biology, led by Prof. G. Barton (Bioinformatics, CLS), where a number of new appointments in the area of Computational Biophysics have recently been made. The numerical and computational expertise of **Lin** and **Kyza** will be brought to bear on problems arising in this area. Additionally, **Lin, Ptashnyk** and **Chaplain** have existing collaborative projects with JHI and **Ptashnyk** has collaborative links with East Malling Research.

Specific future plans for accessing research funding in the short-term include: **Lin** will apply for an EPSRC Intra-disciplinary Fellowship focussed around the research areas of numerical analysis and computational mathematics, mathematical biology, and applied analysis. Building on the success of **Eftimie** and **Ptashnyk**, the other ECRs (**Trucu, Kyza, Murray, Janvier**) will apply for EPSRC First Grants by early 2014. **Janvier** will apply for an STFC New Applicants scheme grant, prior to the MHD group application for renewal of the current STFC Consolidated Grant in 2016. Members of the MHD group will also individually continue to target funds from a diverse range of sources. **Davidson** and **Hornig** are currently Co-Is on separate Leverhulme Trust Research Programme Grant applications (Living with Change: Principles and Processes of Sustainable Adaptation and The Nature of Knots, respectively, decisions on which will be made later in the year). **Pontin** is PI on a proposal under consideration for a US Air Force Research Laboratory Research Project on solar energetic particles.

To maximise funding opportunities the UoA ensures information about funding and collaborations is easily available to all staff (via the ResearchProfessional database).

Fletcher has undertaken consultancy work and provided advice for the following organisations: European Space Agency; IBM; NHS Tayside; DOT Products (now PAS); Millenium International LLC; ICI; Scottish Hydroelectric (now SSE); Electricité de France, and BAe systems. **Lin** is in the process of setting up new consultancy work with an offshore renewable energy company, Oldbaum

Services, concerning CFD modelling of wind farms.

e. Collaboration or contribution to the discipline or research base

The UoA has an active, vibrant, weekly seminar programme with over 100 speakers from UK and Europe having given talks during the REF period. Supported through grants and the NRP PECRE scheme, staff at all levels have strong and active international collaborations throughout Europe and USA. The UoA also has strong local industrial collaboration in the BioTech area (Cyclacel, CXR Biosciences) that was initiated some years ago through an EPSRC Mathematics for Business grant (**Davidson, Chaplain**) and Mathematics CASE PhD Studentships (**Chaplain**).

Through grants from the Edinburgh Mathematical Society, NRP and ERC, the MB group has hosted regular international visitors since 2008 – Lowengrub (UCI), Cristini (University New Mexico), Gerisch (Darmstadt Technical University), Marciniak-Czochra (Heidelberg), Kim (Michigan), Preziosi (Politecnico di Torino), Delitala (Politecnico di Torino), Hellander (Uppsala), Ichigawa (Tokyo), Suzuki (Osaka). The MHD group maintains active international collaborations including Aulanier, Démoulin, Schmieder (Meudon, Paris), Bhattacharjee and Huang (Princeton), Craig (Waitkato), Galsgaard (NBI Copenhagen), Karimabadi (UCSD California), Welsch (Berkeley). These have been supported through dedicated travel funds on grants from STFC and the Royal Society. Finally, through funding from the Fundamental Research Funds for the Central Universities of China, EMS, RSE, Indian National Science Academy and the EU, the NACM group has active collaborations with researchers around the world including Abdulle (EPFL Lausanne), Bonito (Texas A&M), Katsaounis (Crete), Nochetto (Maryland), Pego (Carnegie Mellon), Shapeev (Minnesota), Shen (Purdue), Singh (Dehli), Spiteri (Saskatoon), Sun (Shangdon), Tai (Bergen), and Zheng (UST Beijing).

Inter-disciplinary research is particularly strong in the MB group, with all staff having active collaborations with colleagues in Life Sciences and/or Medicine. Several members of staff also have inter-disciplinary collaborations with scientists at JHI. Two major exemplar inter-disciplinary projects are **Chaplain**'s €1.69M ERC AdG (awarded through the ERC Interdisciplinary Panel) involving 4 co-Is in Life Sciences/Medicine, and a recently awarded £850k Breakthrough Breast Cancer grant – *Predicting and measuring response to neoadjuvant chemotherapy through novel imaging, tissue analysis and modelling of peritumoral tissues* – involving collaborative work by the MB group with 18 clinical scientists in Ninewells Hospital. Recently (2013) the MB group formed a bilateral research agreement with the corresponding group in Heidelberg (Prof. A. Marciniak-Czochra) and a joint visitor programme is now in place. Through funding from the Northern Research Partnership, international collaborations are in place with researchers in Darmstadt (**Trucu, Chaplain**), Ontario (**Eftimie**) and USC (**Murray**). **Davidson** is developing links with colleagues in Munich (TU and The Helmholtz Centre) and Guelph, Canada, with support from the Edinburgh Mathematical Society. **Chaplain** is a visiting professor at the Institute of Medical Science, Tokyo. Future international workshops/conferences are also currently planned (e.g. Chaplain will co-organise a workshop on cancer invasion at the Mathematical Biosciences Institute (OSU, USA), October 2014; **Chaplain, Trucu** and **Lin** will organise an international ICMS workshop on multiscale modelling of cancer invasion, June 2015).

Exemplars of leadership in the academic community across the UoA are as follows:

<u>International conference/workshop organization:</u>

The MB research group organised the triennial ESMTB conference (ECMTB2008) in July 2008, attended by over 550 participants. In addition to this major international conference, the MB group has hosted several important workshops and summer schools on various aspects of cancer modelling: Angionet 2009 workshop (50 participants); Marie Curie Cancer Modelling Research Training Network Summer School, August 2010 (80 participants). The MHD group co-hosted the 7th International Cambridge Workshop on Magnetic Reconnection, August 2010 (30 participants). Hornig was Visiting Fellow and Workshop Organiser of the Isaac Newton Programme Topological Dynamics in the Physical and Biological Sciences in 2012.

<u>National/international advisory board membership:</u>

Chaplain: Scientific Advisory Committee Mathematical Biosciences Institute, 2008–2012; External Scientific Advisory Committee of Virtual Liver Network, 2013. **Hornig:** member of the UK Solar Physics Council, 2011– present.

Leadership roles in industry, commerce, Research Councils, learned societies:

Chaplain: President, Edinburgh Mathematical Society, 2010–2012; MRC Grant Panel for Discipline Hopping Awards 2008/2009/2010; Peer Review College Member, 2010–2013. **Davidson:** Vice-President, British Mycological Society, 2009–2011; Director, Nonlinear and Complex Systems Group, Northern Research Partnership, 2013–present; Peer Review College Member, 2013–present.

Conference programme chairs:

Chaplain: Conference Programme Chair, ECMTB08, Edinburgh; Track Chair, ECCS09 European Conference on Complex Systems, Warwick; Thematic Minisymposium Chair (Mathematics of Cancer), ICIAM 2011, Vancouver.

Invited keynote lectures:

Chaplain: SMB-CSMB2010 International Conference, Hangzhou, China; ECMI2010, Wuppertal, Germany; BAMC2011 University of Birmingham; 3rd CREST-SBM International Conference Hiroshima, Japan, 2011; Thematic Minisymposium Cancer Modelling, ICIAM 2011, Vancouver, Canada; **Davidson:** Equadiff 2011, Loughborough, UK; Invited Mini-symposium speaker, Modelling Biofilms, ECTMB2011, Krakow, Poland; Invited Mini-symposium speaker, Modelling Biofilms, SMB2012, Knoxville, USA; MMCOMNET/CABDYN Workshop, 2008, Oxford University; British Mycological Society Annual Scientific Meeting, 2009, Dundee; **Eftimie:** CAIMS 2009 Annual Meeting, London, Ontario, Canada; ICMS CANPDE workshop on mathematical ecology, 2011, Edinburgh; **Fletcher:** International Conference, Optimization Techniques for Inverse Problems, Modena, Italy, 2012; **Hornig:** ICMS workshop Tangled Magnetic Fields in Astro- and Plasma Physics, Edinburgh, 2012; 8th AIMS International Conference, Dresden, Germany, 2010; International Astrophysics Forum, Alpach, 2011; **Kyza:** MAFELAP 2013, Brunel University; Numerical Approximation of PDEs (Ricardo H. Nochetto's 60th birthday), Gargnano del Corda, Italy, 2013; SIAM CCSE 2013 Boston, USA; **Lin:** Math Modelling and Computations, Wuhan, China, 2013; Applications of Structure-preserving Algorithms, Nanjing, 2012; Numerical Methods for Problems with Layer Phenomena, Dublin, Ireland, 2011; Computational Multiscale Methods, Oberwolfach, Germany, 2009; Modelling and Simulation (Roland Glowinski's 70th birthday Conference), Xi'an, China, 2008; SES 50th Annual Technical Meeting, Brown University, 2013; **Ptashnyk:** 8th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Dresden, Germany, 2010; 9th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, USA, 2012; **Trucu:** International Kepler Workshop on Complex Living Systems: Managing complexity, reducing perplexity, Heidelberg, Germany, 2011; **Wilmot-Smith:** ICMS workshop Tangled Magnetic Fields in Astro- and Plasma Physics, Edinburgh, 2012.

Journal editorships:

Chaplain: Guest Editor, Journal of Mathematical Biology, Special Issue *Computational Oncology*, **58**, 2009; **Davidson:** Executive Editor, Proceedings of the Royal Society of Edinburgh Series A, 2011 – present; Editor, Fungal Ecology, 2008–present; Guest Editor, Special Issue of IMA Applied Mathematics: *2020 Visions of the Future*, 2011; Invited Editor, Issue of Mathematical Modelling of Natural Phenomena: *Front Propagation*, 2013; **Lin:** Guest Editor, *Interface Problems and Applications in Fluid Dynamics*, American Math Society, **466**, 2008; **Ptashnyk:** Guest Editor, Applicable Analysis, Special Issue *Analysis and Approximation of Miscrostructure Models*, **91**, 2012; Guest Editor, Mathematical Modelling of Natural Phenomena, Special Issue *Plant Modelling*, **8**, 2013.

Fellowships, awards and prizes:

Chaplain: ERC Advanced Investigator Grant (2008); **Eftimie:** Canadian Applied and Industrial Mathematics Society (CAIMS) Cecil Graham Doctoral Dissertation Award (2009); MITACS Postdoctoral Research Fellowship (2010); EPSRC First Grant (2013); **Fletcher:** Royal Society of Edinburgh Gold Medal (2008); **Janvier:** AXA Research Fund Postdoctoral Fellowship (2011); **Kyza:** Personal Research Fellowship, ESF–EU, National Resources of Greece (2011); **Lin:** Leverhulme Personal Research Fellowship (2009); **Pontin:** Philip Leverhulme Prize for Astronomy and Astrophysics (2011); **Ptashnyk:** EPSRC First Grant (2013).