CURRICULUM VITAE

Stephen Woodward BSc (Hull) PhD (London) CBiol FSB

Work Address: University of Aberdeen, School of Biological Sciences, Department of Plant and Soil Science, Cruickshank Building, Aberdeen AB24 3UU, Scotland, UK.

Telephone: +44-1224-272669 **Mobile**:+44-77931-96308 **E-Mail**: s.woodward@aberdeen.ac.uk

Date of Birth: 05-June 1956 **Place of birth:** Stoke-on-Trent, England

WORK EXPERIENCE

2013 – **Professor**: personal chair, Plant and Soil Science, Institute of Biological and Environmental Sciences, University of Aberdeen

2008 – 2013 **Reader**, School of Biological Sciences, University of Aberdeen

2002 – 2004 **Head of Agriculture and Forestry**, School of Biological Sciences, University of Aberdeen

2000 – 2002 **Research Group Leader**, Plant Pathology Research Group, Department of Agriculture and Forestry, University of Aberdeen.

1995 – 2008 **Senior Lecturer**, University of Aberdeen.

1989 – 1995 **Lecturer** (Forest Pathology and Urban Forestry), Department of Forestry, University of Aberdeen.

1986 – 1989 **Research Officer**, Oxford Forestry Institute, Department of Plant Sciences, University of Oxford.

1983 – 1986 **Postdoctoral Research Assistant,** Oxford Forestry Institute, Department of Plant Sciences, University of Oxford.

EDUCATION

1979 – 1983	Wye College, University of London	PhD: Plant Pathology
1974 – 1977	University of Hull	BSc: Plant Biology and Zoology

MEMBERSHIP OF PROFESSIONAL BODIES

Fellow of The Society for Biology (elected April 2012)
British Society for Plant Pathology
British Mycological Society
Mediterranean Phytopathological Union

***MAJOR RESEARCH FUNDING* (>£10,000)**

Year	Funding Body	Amount	Funding Type	Project Title	Collaborators
2018	Council for the European Community	£270,000	Marie Skľodowska-Curie International Training Network	Pathogen-informed Resistance to Oomycete diseases in Ecosystems, Agriculture and Aquaculture	Dr. L. Grenville-Briggs (SLU), Dr A-M. Vettraino (UNITUS) + 16 others
2017	ESCO-KIVU	£39,100	Studentship support	Verticillium wilt of cocoa in DR Congo and Uganda	Dr E. Boa (UoA)
2017	Cocoa Resarch UK	£21,500	Grant		
2014	BBSRC	£148,000	Grant	Promoting resilience of UK tree species to novel pests and pathogens	Lead: S. Cavers (CEH Edinburgh); multiple collaborators
2014	BBSRC	£338,000	Grant	New approaches for the early detection of tree pests and pathogens	Lead: R. Mumford (Fera); multiple collaborators
2014	EUPHRESCO	£99,000	Fellowship	Detection and management of soil-borne pathogens in the nursery trade	P. Bonants (Plant Research International, NL); E. Boa
2013	DEFRA	£305,235	Grant	Social and economic analyses supporting the	UK Forest Research, FERA, Scion (New

				implementation of the Great Britain Dothistroma needle blight strategy	Zealand)
2013	Joint National Committee on Conservation	£116,305	Grant	Ash Dieback – impacts on species which depend on, or are associated with ash	James Hutton Institute
2012	DEFRA	£44,417	Scoping	Accelerated detection and diagnosis of invasive alien pests and pathogens in imported plants	Several
2011	British Trust for Ornithology	£10,000	Grant	Do birds vector *Phytophthora ramorum*?	
2011	Forestry Commission Scotland	£35,000	PhD grant	Susceptibility of Scots and Lodgepole pine provenances to *Dothistroma septosporum*.	Dr Anna Brown, Forest Research
2011	Scottish Forestry Trust	£35,000	PhD grant		
2010	Council for the European Community	£11,000	Tender	Forest Disturbances Caused by Biotic Agents	BioIntelligence Service (France); BOKU (Austria)
2010	Council for the European Community	£425,000	FP7 RTD [coordinator]	ISEFOR: Increasing sustainability of European forests: Modelling for security against invasive pests and pathogens under climate change.	19 partners; SW leads; L. Belbahri, J. Stenlid, P. Capretti, A. Vannini, J. Nowakowska…
2010	Knowledge Transfer: BBSRC/Department for Trade & Industry	£114,235	Knowledge Transfer	Improving yields of nematodes for the control of slug pests	Marcel Jaspars (Chemistry); Becker-Underwood
2009	Council for the European Community	£130,000	FP7 RTD	BACCARA: Biodiversity And Climate Change, A Risk Analysis	Multiple; Aberdeen: A. Taylor
2008	Cooperation in Science and Technology	approx. £400,000	COST Action	Established and Emerging Phytophthora: Increasing Threats to Woodland and Forest Ecosystems in Europe	Multiple. SW leads
2008	Council for the European Community	£133,300	Marie Curie Fellowship	SYBHES: Systems Biology of the *Heterobasidion*-Spruce Interaction.	Fellow: Guiliana Deflorio; Marcel Jaspars, Mark Law, Carl Fossdal.
2008	British National Space Centre/UK Forestry Commission	£60,000	Research grant (scoping)	An Implementation Test on "Forest Species Discrimination, Disease Indication and Canopy Closure"	Prof. David Miller (Macaulay Insitute); Dr A.D. Cameron, Dr. M. Aitkenhead
2008	Scottish Natural Heritage	£46,800 +£6,000 ex Macaulay Institute +£6,000 ex RBGE	Studentship	The hazel gloves fungus in Atlantic hazel Woodlands	David Genney (SNH); Brian Coppins (RGBE); Ian Andreson (Macaulay); Gareth Griffith (Aberystwyth)
2007	Bransby Home of Rest For Horses	£78,611	Studentship	Common Ragwort in Pasture: Potential for Biological Control Using Fungal Pathogens	
2006	Australian Research	£92,700	Research grant	Linking environmental stress	Dr. C. Mohammed,

	Council	[+£44,200 in kind]		in pine plantations to bark stripping by browsers and fungal attack: developing novel options for management	(lead, University of Tasmania); ENSIS; Forestry Tasmania; DPI, NSW; Prof P. Bonello, Ohio State University.
2006	Scottish Crops Research Institute & University of Aberdeen	£59,422	Studentship	Biological mechanisms involved in stabilizing sandy soils of the Machair	Dr. Blair McKenzie, SCRI
2004	Forestry Commission	£40,800	Studentship	Distribution and biology of *Anisogramma virgultorum* on birch in Scotland.	Dr. Sarah Green, Forest Research, Roslin
2001	Council for the European Community	£291,650	Quality of Life Programme, RTD	Resistance of spruce to root and butt rot disease	SLU, Uppsala; IMGPF, Firenze; FRI, Norway; Skogforsk, Sweden; FRI, NAGREF, Athens.
2001	Council for the European Community	£120,850	Quality of Life Programme, Concerted Action	Modelling of *Heterobasidion* infection in European forests: a decision-support tool for the forest manager.	FC Research; Joensuu; FRI Thessaloniki; DiVAPRA Torino; FRC Vienna; Uppsala; INRA Nancy; Univ. Poznan.
1999	British Ecological Society	£80,000	Studentship + travelling expenses	Responses to damage affecting regeneration of dipterocarps in rainforests of Sabah	Dr. M.A. Pinard
1999	Malaysian Government	£27,469	Studentship	Invasion of wounds and decay of timber in logged dipterocarp forests of Malaysia	Dr. M.A. Pinard
1999	Scottish Forestry Trust	£24,680	Studentship	Distribution of *Peridermium pini* in north-east Scotland	Dr. D. Miller, MLURI
1997	Government of Taiwan	£55,000	Studentship	Molecular biology of resistance to *Heterobasidion annosum* in spruce	
1997	Scottish Forestry Trust	£15,000	Consumables	Molecular detection and identification of damping-off fungi in Scots pine forests	Dr. C. Leifert
1996	University of Aberdeen (Research Committee)	£27,000	Studentship	Damping-off fungi in naturally regenerating Scots pine forests	Dr. C. Leifert
1994	Council for the European Community	£128,000	AAIR Concerted Action	*Heterobasidion annosum* in European Forests: Prospects for Effective Control	Profs. J. Stenlid (Uppsala), R. Karjalainen (Helsinki), A. Hüttermann (Gőttingen)
1993	Scottish Forestry Trust	£36,081	Studentship	Fungal spoilage of kiln dried timber in Scottish sawmills	Dr. J.A. Petty
1993	University of Aberdeen (Research Committee)	£25,000	Studentship	Bacterial ecology of Sitka spruce stumps	
1991	Forestry Commission	£27,997	Studentship	Fungal ecology of Sitka spruce stumps	Dr. D.B. Redfern (Forestry Commission)

1991	Natural Environment Research Council	£15,265	Research Grant	Genetic fingerprinting of *Peridermium pini*	Dr. K.R. Mitchelson

OTHER ACADEMIC AND PROFESSIONAL ACTIVITIES

2014 – 2018	Vice Chair COST FP1406 Pine pitch canker - strategies for management of Gibberella Circinata in greenhouses and forests (PINESTRENGTH)
2014 – 2018	Management Committee member, COST Action FP1401 'Global Warning'
2014 – present	College of Life Sciences and Medicine 'Champion' for European Funding
2013 – 2015	Member of the Scottish Tree health Advisory Group
2012 – 2013	Member of UK Department for Environment, Food and Rural Affairs (DEFRA) Task Force on Tree Health and Plant Biosecurity (Chair: Prof. C.A. Gilligan, University of Cambridge)
2012 – 2013	Member 'Ash Dieback Expert Group', Government Office for Science (advising UK Government Chief Scientific Adviser, Prof. Sir John Beddington).
2011 – 2015	Management Committee member, COST Action FP1102: Determining Invasiveness and Risk of Dothistroma
2010 – 2014	Management Committee member, COST Action FP1002: Pathway Evaluation and Pest Risk Management in Transport
2008 – 2012	Chair COST Action FP0801 Established and Emerging Phytophthora: Increasing Threats to Woodland and Forest Ecosystems in Europe
2009 – 2012	External examiner for distance learning forestry degree programmes, University of Cumbria.
2007 – 2011	External examiner for forestry degree programmes, UHI Millenium Institute, Inverness
2007 -	Editor-in-Chief, *Forest Pathology*.
2007 – 2009	North East Scotland Agriculture Advisory Group, committee member
2005 – 2015	Trustee of the Scottish Forestry Trust
2001 – 2006	Management Committee, COST Action C15
2001 – 2003	Professional Development Committee, Institute of Biology, Scotland Branch
1999 – 2000	Universities representative (substitute) to Forestry and Arboriculture Training Council
1998 – 2003	UK Representative to International Society for Plant Pathology, Forest Tree Pathology Division
1997 – 2000	UK Representative to COST Action C3, Working Group 3
1994	Visiting scientist, Forest Health Management Centre, Karura Forest Station, Nairobi, Kenya
1993	Visiting scientist, Institute of Microbiology, Marie Curie- Sklodowska University, Lublin, Poland.
1991	Visiting scientist, Department of Forest Mycology and Pathology, Swedish University of Agricultural Sciences, Uppsala, Sweden.
1987 – 1988	Member of Forest Research Co-ordinating Committee sub-group on tree physiology. (*Chairman*: Professor J.P. Cooper CBE FRS).
1985 – 1987	Technical Editor of Translations for *Biomass News International*.

Professional travel to: Australia, Belgium, Bosnia and Herzegovnia, Canada, Colombia, Croatia, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Indonesia, Italy, Ireland, Kenya, Lithuania, Malaysia (Sabah), The Netherlands, New Zealand, Norway, Poland, Portugal, Peru, Russia, Serbia, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Tanzania, Turkey, USA.

RESEARCH AND SCIENTIFIC WORK

RESEARCH EXPERIENCE: I have thirty nine years of experience in research, principally in plant pathology, with additional experience in plant tissue culture. This experience has included work towards my PhD, followed by nearly seven years in post-doctoral work prior to my appointment as lecturer in forest tree pathology at the

University of Aberdeen in 1989. Subsequently, I have carried out personal research and supervised postdoctoral fellows, doctoral, masters and undergraduate students in research.

RESEARCH PHILOSOPHY: The main goal of my research is to develop an in depth understanding of the interactions between microorganisms and plants, in terms of host defence against pathogens, and the macro- and micro-ecology of the environment in which the initial defence responses occur. I aim to apply the most up-to-date methods available to investigate these themes, including state–of-the-art chemical analyses (e.g. metabolomics; ionization mass spectrometry) and molecular biology techniques including metagenomics, to investigate microbial diversity and ecology to understand the host resistance response.

PRIMARY RESEARCH FIELDS: The physiology and ecology of plant–pathogen interactions. The main focus of my research is on fungi attacking roots, including *Phytophthora* spp., *Pythium* spp. and *Fusarium* spp. (primary roots), and *Heterobasidion annosum* and *Armillaria* spp. (secondary roots). Host species studied include *Pinus sylvestris*, *Picea sitchensis*, several broadlaved trees and various horticulture crops. Work on *Heterobasidion* has included investigation of the bacterial and fungal ecology of spruce stumps in relation to colonization by the pathogen, modelling disease development in relation to the application of control methods, and the physiology and molecular biology of host responses (resistance) to infection. To date, work on fine root pathogens has focused on the occurrence and ecology in semi-natural and plantation forests. Research has also included projects on rust diseases, cankers and foliar pathogens of trees.

Over the last 10 years, my work has focused on alien invasive pathogens that threaten woodland and forest ecosystems globally.

I have supervised a number of PhD students from tropical countries, in work on the occurrence and ecology of diseases in native forests of Sabah, Malaysia, and on genetic improvement of *Pterocarpus* in Zambia. Work on agricultural and horticultural crops focuses on Fusarium diseases of species including rice, tomato, gladiolus and maize. I am also involved in research on the use of white rot fungi, including *Trametes, Armillaria* and *Heterobasidion*, to degrade complex pollutants and for potential in phytoremediation.

SIGNIFICANT PUBLICATIONS: A number of my research publications have been highly influential in progressing our understanding of the biology of tree diseases:

- Papers on the response to root pathogens in Sitka spruce, published in 1988 (Woodward & Pearce, 1988: *Physiological and Molecular Plant Pathology* **33**, 127-149; and *Physiological and Molecular Plant Pathology* **33**, 151-162), particularly the first of these, established the significance of antifungal responses in the host tree against root pathogens.
- The publication by Kasuga *et al*. (1993: *Current Genetics* **24**:433-436) was the first paper of significance to report the use of molecular methods to distinguish European species of *Heterobasidion*.
- Work on ecological aspects of the multitrophic nature of host-pathogen responses are illustrated in several papers, including Johnson et al. (2003: *Oecologia* **134**:388-396) Murray & Woodward (2003: *Forest Pathology* **33**:53-67; 2007: *Forest Pathology* **37**:217-235) and Woods et al. (2005: *Forest Pathology* **35**:213-229; 2006: *Mycological Research* **110**:854-868).
- Numerous papers on the development of new techniques for understanding tree-pathogen interactions, including:
    - Martin et al. 2005: *Tree Physiology* **25**: 1331-1338.
    - Deflorio et al. 2011. *Physiological and Molecular Plant Pathology* **75**:180-187.
    - Deflorio et al. 2012. *Analytical & Bioanalytical Biochemistry* **402**:3333-3343
    - Siebold et al. 2012. *Analytical & Bioanalytical Chemistry* **402**:3233-3331.
- Bodles et al. (2006: *Tree Physiology* **26**: 775-782) describes the use of real-time (quantitative) PCR to accurately quantify *Heterobasidion* in Sitka spruce; it is also the first paper to describe the quantitation of a fungus in living wood tissues of a conifer.

- Woodward et al. (2007: *Tree Physiology* **27**:1701-1710) demonstrates the use of morphological responses to infection and host monoterpenes components as markers for relative susceptibility of Sitka spruce to *Heterobasidion annosum*.
- Chavarriaga et al. (2007: *FEMS Microbiology Letters* **276**:67-74) provides evidence for the presence of the potentially highly damaging pathogen, *Phytophthora cinnamomi* in pine forests of northern Scotland. This pathogen represents a major threat to forest ecosystems in a time of increasing temperatures.
- Several publications (notably Maalej *et al.*, 2009; Khlifi *et al*., 2009, 2010) illustrate the abilities of white rot fungi to degrade textile industry wastes; this work has been taken further, with UK isolates of *Armillaria* showing considerable promise in this field.
- Major contributions on peroxidases, proteases and ABC transporters to the Heterobasidion genome project (Olson et al. 2012. *New Phytologist* **194**: 1001-1013).
- In depth analyses of invasive alien pathogens threatening the integrity of Europe forst ecosystems (Santini et al. 2013. *New Phytologist* **197**: 238–250).
- Development of an ecosystem-wide analysis of the impact of invasive pathogens on biodiversity (e.g. Mitchell et al. 2014. *Biological Conservation* **175**: 95-109).
- Overviews of the impacts of alien invasives on biodiversity (e.g. Roy et al. 2017; Santini et al. 2018).

My most influential publication is the book (senior editor): Woodward *et al.* 1998: Heterobasidion annosum: *Biology, Ecology, Impact and Control*. CABI, Wallingford. Supported with EU funding that I obtained and coordinated, this monograph reviews all work published on *Heterobasidion* up to 1997, providing the background for all subsequent research. The book maintains a very high level of citation in the literature.

ACTIVITIES IN THE ACADEMIC COMMUNITY

***Editor of Journals*:** *Forest Pathology* Editor-in-Chief (2007-present); associate editor (1998 – 2007); senior editorial board of *European Journal of Plant Pathology* (2010 – present) and *Phytopathologia Mediterranea* (2008 – 2017); *Journal of Plant Pathology* (1997-2007); *Ghana Journal of Forestry* (2006-). Advisory board *Folia Forestalia Polonica* (2010 – present).

Referee to Journals: *Forest Pathology; Journal of Plant Pathology; Mycological Research; Mycopathologia; The New Phytologist; FEMS Microbiology Letters; Journal of Biotechnology; Plant Cell, Tissue and Organ Culture; Plant Pathology; European Journal of Plant Pathology; Plant Disease; Forest Ecology and Management; Journal of Eukaryotic Biology; Journal of Heredity; Forestry; New Zealand Journal of Forest Research; Scandinavian Journal of Forest Science; Journal of Tropical Forest Science; Annals of Botany; Annals of Applied Biology; Phytopathologia Mediterranea; Biomass and Bioenergy; Seed Science and Technology; Faculty of Forestry Records, Tanzania; BioControl; Chemosphere*; *Applied Biochemistry and Biotechnology*; *Canadian Journal of Forest Research*; *Physiological and Molecular Plant Pathology.*

Referee for Research Funding Applications: Natural Environment Research Council (NERC); Biological and Biotechnology Sciences Research Council (BBSRC); National Science Foundation, USA (NSF); Norwegian Research Foundation; Portuguese Research Council (FCT); Scottish Executive Environment and Rural Development Department (SEERAD); Ohio State University; Polish-Swiss Research Programme; Swiss COST-support programme. EU Forestry funding Evaluator (2007-present). COST programme. Also acted as scientific auditor to completed EU RTD projects.

Conferences

Conference talks are listed in the publications (below). I have also chaired numerous sessions at conferences and helped to organize many sessions.

TEACHING and SUPERVISION

UNDERGRADUATE AND POSTGRADUATE TEACHING AND SUPERVISION:

Undergraduate and postgraduate taught courses to which I contribute/have contributed:

Level	Course	Role	Lecture/Tutorial Hours p.a.	Practical hours
Current Teaching Commitments				
1	Plant Diversity	Lecturer	9	6
2	Plants, Humans and the Environment	Lecturer	4	0
3	Plant-Envirnment Interactions	Co-ordinator	36	4
4	Biology Honours Research Projects	Co-ordinator	n/a	n/a
Previous Teaching Commitments:				
1	Molecular Biology (Plant defence)	Lecturer	3	9
1	Sustainable Production	Lecturer	9	0
2	Plant Diversity	Lecturer	9	9
2	Dendrology (Tree Identification)	Co-ordinator	3	15
3	Introduction to Forestry	Lecturer	8	0
3	Arboriculture	Co-ordinator	40	8
3	Forest Protection I: Pathology	Co-ordinator	36	18
3	Tree Production	Lecturer	18	9
3	Forest Planning	Lecturer	12	0
3	Forest Management	Lecturer	12	0
3	Study Tour of Southern Britain	Co-ordinator	n/a	14 days
3	Biology and Ecology of Plant Disease	Coordinator	12	0
4	Urban Forestry Management Plan	Co-ordinator	n/a	12 days
4	Urban Forestry Overseas Study Tour	Co-ordinator	n/a	9 days
4	Special Topics in Forestry	Tutor	4	0
4	Biology and Ecology of Forest Health	Co-ordinator	40	8
4	Trees in the Urban Environment	Co-ordinator	40	8
4	Physiological Plant pathology	Tutor	8	0
5*	Arboriculture	Co-ordinator	40	8
5	Forest Protection	Co-ordinator	40	8
5	Trees in the Urban Environment	Co-ordinator	40	8

*: Level 5 = taught Masters programme

Supervision of Undergraduate Research Projects: Sixty seven undergraduate project students supervised between 1989 and 2018.

Supervision of Taught Masters Dissertations: Thirty one masters research dissertations supervised between 1992 and 2018.

Supervision of research students

NAME	YEAR	TITLE
Istiaq Ahmed	Current	Multitrophic interactions in the rhizosphere of rice in determining susceptibility to *Fusarium* infections
Alexandre Rutikanga	Current	Impacts and management of *Verticillium dahliae* on potato in Rwanda
Aisha Al-Shatti	Current	Mechanisms of action of rhizosphere prokaryoties in plant disease reduction
Anne-Sophie Bouchon	Current	Understanding the biology of Verticillium wilt of cocoa
Mai Marefi	writing	Peroxidases in brown rot fungi.
Alexandre Puertolas	2017	Quantitation of Oomycete plant pathogens in the plants for planting pathway.
Faizah Alezi	2018	Enhancement of antibiotic effects in biological control using natural adjuvants.
Michelle Stamp	2016	Diversity of Oomycota in fresh and brackish-water habitats.

Stuart Fraser	2015	Variation in susceptibility of Scots and lodgepole pine provenances to *Dothistroma septosporum*.
Alexandra Widdowson	2015	Degradation of mineral oil processing wastes by white rot fungi
Adnan A. Lahuf	2015	Control of potato virus Y (SCRI)
Andrew Madigan	2014	Masters: Endophytic fungi in hardy woody Oleaceae.
Katie Grundy	2014	Ecological intereactions affecting the disctribution of hazel gloves fungus in the Atlantic Hazel Woodlands of Scotland
Susan Jarvis	2013	Fungal diversity in Scots pine forests
Aqeel N. Barbar	2013	Molecular biology of the potato-potato virus Y interaction (SCRI)
Sunday Popoola	2012	Arbuscular mycorrhiza-pathogen-host interactions in agroforestry systems.
Karen Pearson	2011	Root pathogens as potential biological control agents for common ragwort.
Walid Nosir	2010	Sustainable control methods for fine root pathogens in soil-less culture for *Gladiolus*.
M. Thorsen	2010	Fungal diversity and soil binding properties in the Machair environment.
N. Bouqellah	2011	Physiology of the *Brevibacillus brevis-Fusarium oxysporum* f.sp. *lycopersici* interaction on tomato roots
J. Mohd	2010	Responses to damage affecting the distribution and regeneration of dipterocarps in the rainforests of Sabah
H. de Silva	2008	Distribution and biology of *Anisogramma virgultorum* on birch in Scotland
E. Kasumu	2005	Genetic improvement of *Pterocarpus angolensis*
M. Sudin	2005	Invasion of wounds and decay of timber in logged dipterocarp forests of Malaysia
D. Moseley	2004	*Peridermium pini* in the Forests of North-East Scotland
D. Tsatzikis	2003	Targetted use of biological control agents against leaf and root pathogens
D. Chavarriaga	2003	Biological Control of Fine Root Pathogens in Forest Nurseries
T. Daggas	2002	Masters: Biological control of root disease pathogens in glasshouse crops of northern Greece
E. Brudi	2001	Masters: Longitudinal prestresses in *Tilia cordata* and *Acer pseudoplatanus*
W.J.A. Bodles	2000	Damping-off Fungi in Natural Regeneration of Scots Pine Forests
A.C. Murray	1998	Bacterial Ecology of Sitka Spruce Stumps in Relation to Fungal Degradation
C.M. Woods	1996	The Fungal Ecology of Sitka Spruce Stumps
C.J. Payne	1996	Fungal Spoilage of Kiln Dried Softwoods in Scottish Sawmills
T. Kasuga	1995	Molecular fingerprinting of pine, spruce and fir strains of *Heterobasidion annosum*
K.R. Spanos	1995	Clonal Propagation of *Cupressus* Species, and Resistance to *Seiridium* Canker
V.R. Nsolomo	1990	Masters: Use of cultured *Pinus* embryos to investigate resistance mechanisms against infection by *Heterobasidion annosum* and *Peridermium pini*

Postdoctoral Research Fellows and Research Assistants

NAME	YEARS	PROJECT	FUNDING SOURCE
Dr Amani Bellarich	2017	Characterization of Ophiostomatoid fungi associated with *Platypus cylindrus* in Tunisia	COST Global warning STSM
Dr Tugba Dogmus	2014	Distribution of elements in needles of Scots pine showing differential susceptibility to *Dothistroma septosporum*	COST DIAROD STSM
Dr Funda Oskay	2014	Population structure of *Dothistroma septosporum* in Turkey	COST DIAROD STSM
Dr Zuzana Heckova	2014	Histology of defence responses to *Dothistroma septosporum* in needles of Scots pine	COST DIAROD STSM
Dr Mostafa Ezzat	2014-16	New approaches for the early detection of tree pests and pathogens	BBSRC/LWEC
Dr Marta Belka	2013	Which common woody Oleaceae are susceptible to *Hymenoscyphus pseudoalbidus*?	FRAXBACK COST Action (STSM)
Dr Jorge Martin-Garcia	2012	Influence of soil temperature on infection of holm oak by *Phytopthora*	Spanish Government
Dr Eleni Siasou	2010-13	Increasing sustainability of European forests	EU Framework 7
Dr Colette Jones	2010-13	Increasing sustainability of European forests	EU Framework 7
Dr. Exildah Chisa-Kasmumu	2010-11	Genetic variation in the biofuel woody species *Jatropha*	Commonwealth Scholarship
Dr Jenna Ross	2010-11	Improving yields of nematodes for the control of	BBSRC + Becker-Underwood

		slugs	
Dr H. Brangaça	2009-10	Impact of Phytophthora infection on fine root turnover in Scots pine	Portuguese Government
Dr P.W.H.K.P. Daulagala	2008-09	Molecular biology of the poplar-rust-L-form bacteria interaction	Commonwealth Scholarship Foundation
Dr G. Deflorio	2008-10	Resistance of spruce to Heterobasidion	Marie Curie Postdoctoral Fellow
Dr S. Chandel	2005-06	Pathogen-bacterial interactions in the rhizosphere	Commonwealth Scholarship Foundation
Dr D.G. Moseley	2004-05	Resistance of spruce to root and butt rot disease	EU Framework 5
Dr M. de Roman	2005-07	Environmental control of carpophore formation in wild fungi	Spanish Government-funded Fellowship
Mr D.G. Moseley	2002-04	Modelling of *Heterobasidion* infection in European forests	EU Framework 5
Ms E. Beckett	2001-04	Resistance of spruce to root and butt rot disease	EU Framework 5
Dr W.J.A. Bodles	2001-05	Resistance of spruce to root and butt rot disease	EU Framework 5
Dr A. Jalsrai	1998	Lignin degrading systems of European intersterility groups of *Heterobasidion annosum*	Royal Society-Mongolian Academy of Sciences Fellowship
Dr W. Mulenko	1993	The role of plant pathogenic fungi in nutrient cycling in native pinewoods	CEC 'Go West' Fellowship
Dr E. Sanchez	1993	Use of *Trichoderma* for the control of sap-stain fungi	British Council-Spain Agreement
Dr Y.A. Spanos	1993	Impact of *Taphrina betulina* infections on growth of *Betula pubescens*	Forest Research Institute, Thessaloniki, Greece
Prof S. von Arnold	1986	Somatic embryogenesis in *Picea sitchensis*	Swedish Academy Fellowship
Dr P. Mathur	1986-87	Propagation of *Leucaena leucocephala* using *in vitro* techniques	British Council

Visiting research students from other institutions

NAME	Home Institute	YEAR	PROJECT
B. Gaggosh	Arid Agriculture University, Rawalpindi, Pakistan	2016	Characterisation of *Fusarium* and *Alternaria* isolates from sesame in Pakistan.
Imen Cherak	University of Batna, Algeria	2013 & 14	Identification of canker-associated fungi on *Cedrus atlantica* in Algeria
M.R. Virdis	University of Sassari, Sardinia	2012-13	Modulating the response of urban trees to wounding using plant growth regulators.
M. Ristetski	University of Skopje, FYR Macdonia	2012	Molecular characterization of Phytophthora isolates from FYR Macedonia (STSM, COST Action FP0801)
D. Belo	Universidade Técnica Lisboa	2011	Oomycota communities in riparian systems in relation to surrounding land use
I. Bacceli	University of Firenze	2010-11	Characterisation of *Phytophthora* isolates from Aberdeenshire riparian ecosystems
M.P. Arena	University of Foggia	2010-11	Influence of rhizosphere micro-organisms on glycoalkaloid content in tomatoes
V. Martini	University of Firenze	2008	Terpenes as markers for susceptibility of mature Sitka spruce clones to *Heterobasidion* infection
E. Haramburu	ENITA, Bordeaux	2004	Molecular biology of *Heterobasidion annosum*
N. Souleti	Institute for Mediterranean Forest Ecosystems, Athens.	2004	Histopathology of wound periderm formation in *Picea abies* inoculated with *Heterobasidion annosum*
J.G. Martin	Polytechnic University of Madrid	2003	Histochemistry of resistance to Dutch elm disease in clones of *Ulmus*

N. Keca	Faculty of Forestry, University of Belgrade	2003-04	Application of molecular methods to the identification of *Armillaria* species in the National Parks of Serbia
L. Zamponi	Dipartimento Biotecnologie Agrarie, Universita degli Studi di Firenze, Italy	2002	Molecular differentiation of *Heterobasidion* genets in a severely infected Sitka spruce stand
E. Silvestrini	Institute for Forest Genetics, Firenze, Italy.	2001	Terpenes as markers for susceptibility of spruce to *Heterobasidion* infection

Doctoral/Research Masters Theses Examined

EXTERNAL	DATE	TITLE	
M. Petterssons	2018	Christmas tree diseases, with emphasis on Phytophthora root rot & Neonectria canker of fir and spruce in southern Sweden and north Carolina	Swedish University of Agricultural Sciences, Alnarp
K. Adusei-Fosu	2017	Improving the detection and control of *Fusarium oxysporum* f.sp. *elaeidis*	University of Nottingham
C. V. Supramaniam	2016	Molecular interaction of *Ganoderma boninense* on young oil palm	University of Nottingham Malaysia
S. Akhund	2016	Integrated management of mycotoxins in red chilli	Arid Agriculture University of Rawalpindi, Pakistan
P. Martinez Alvarez	2015	Environmentally friendly methods for the integrated management of pine pitch canker (PPC) disease	University of Valladolid, Spain
M. Mullett	2014	*Dothistroma septosporum* in the UK	Imperial College London
L.J. Cholerton	2014	Biological control of *Leptosphaera maculans* on *Brassica napus* and quantification of the microbes in planta using qPCR	University of Nottingham
Irfan Ahmad	2013	*Characterisation of shisham* (Dalbergia sissoo) *against dieback disease in various ecological zones of Punjab*	University of Agriculture, Faisalabad
J. Martin-Garcia	2012	*Sustainable management of poplar plantations in Spain*.	University of Valladolid, Spain
S. F. Navqi	2012	*Development of a rapid diagnostic method for* Xanthomonas campestris *pv* semame *and screening of sesame germplasm for resistance*	Arid Zone Agricultural University, Rawalpindi, Pakistan
Y. Nadeem	2011	*Local and systemic defence responses in trees against pathogenic fungi: Differences revealed at the transcriptional level.*	University of Life Sciences, Norway
C. Tellenbach	2011	*Natural disease conrol by root endophytes in a changing climate*	ETH, Zűrich
L. Lombard	2010	*Phylogeny and taxonomy of* Calonectria *and its* Cylindrocladium *anamorphs*	University of Pretoria
M. Hafeez Ullah	2010	*Relationship between charcoal rot disease of sunflower and climatic factors, host resistance and management using biological control agents*	University of Agriculture, Faisalabad
R. Hooper	2009	*The role of stress and factors contributing to the decline of* Eucalyptus wandoo *in southwestern Australia*	University of Western Australia
M.N. Sajid	2009	*Quantification of leaf stripe and rust genes in wheat genotypes in relation to epidemiological factors*	University of Agriculture, Faisalabad
N. Samils	2008	*Monitoring the Control Methods of* Heterobasidion annosum *s.l. Root Rot.*	Swedish University of Agricultural Sciences, Uppsala
M. Atiq	2008	*Prediction of Citrus Canker Disease and its Management*	University of Agriculture, Faisalabad
A. Ali Bokhari	2008	*Studies on Guava Decline and Disease Management*	University of Agriculture, Faisalabad
L. Belbahri	2008	*Oomycete Plant Pathogens: environmental survey,*	Habilitation Thesis, Technical

		model pathosystems, pathogenicity and control	University of Compiegne
S. Swanwick	2007	*Ecophysiology and production of the biocontrol agent* Phlebiopsis gigantea.	Cranfield University
F. Ritchie	2006	*Aspects of the biology, epidemiology and control of* Rhizoctonia solani (*Kühn) on potato*	Scottish Agricultural Colleges/ University of Glasgow
G. Reynolds	2006	*The vegetative propagation and early development of dipterocarp cuttings*	Imperial College of Science and Medicine, University of London
N. Jønk	2005	Defense responses in *Picea abies* against the pathogenic fungi *Ceratobasidium bicorne* and *Heterobasidion annosum.*	KVL, Copenhagen, Denmark
A.T. McHugh	2004	Genetic transformation of *Ulmus procera* SR4 using reporter genes *gusA* and *gfp* by the *Agrobacterium tumefasciens* method.	University of Abertay Dundee, UK
A. Eyles	2003	Wound responses of *Eucalyptus globules* and *E. nitens*; anatomy and chemistry.	University of Tasmania
R. Pilbeam	2003	Effects of phosphate on disease development and histological responses in *Eucalyptus marginata* infected with *Phytophthora cinnamomi*.	Murdoch University, Western Australia
P. Maijala	2000	Heterobasidion annosum *and wood decay*: *Enzymology of cellulose, hemicellulose and lignin degradation.*	University of Helsinki, Finland
E. O'Gara	1998	*Infection and disease of* Eucalyptus marginata (*Jarrah*) *caused by* Phytophthora cinnamomi *in rehabilitated bauxite mines in the south-west of Western Australia.*	Murdoch University, Western Australia
F. Raziq	1998	*Biological Control of* Armillaria	University of Reading, UK
K.E. Jayasuriya	1994	*Studies on Biological Control of* Rigidoporus lignosus *the Cause of White Root Disease of Rubber Tree* (Hevea brasiliensis).	University of Edinburgh, UK
J. West	1994	*Chemical Control of* Armillaria	University of Reading, UK
M. Lindberg	1991	*The Resistance of* Picea abies *Bark to* Heterobasidion annosum	Swedish University of Agricultural Sciences, Uppsala
PRE-EXAMINER:			
M. Terho	2008	*What was behind the bark? – A retrospective assessment of decay among urban* Tilia, Betula *and* Acer *trees felled as hazardous in the Helsinki City Area*	University of Helsinki, Finland
J. A. Martín	2006	*Factores anatómicos y químicos del xilema de* Ulmus minor Mill. *relacionados con la resistencia a* Ophiostoma novo-ulmi *Brasier.*	University of Madrid
T. Piri	2003	*Silvicultural control of* Heterobasidion *root rot in Norway spruce forests in southern Finland: Regeneration and compensatory fertilization in infected stands*.	University of Helsinki, Finland
INTERNAL:			
A.J.E. Price	2017	*Effects of early release of* Picea sitchensis *natural regeneration on the mechanical properties of the juvenile and mature wood*	
D. Doyle	2017	*Evaluating the role of fungicides and host resistance in spring barley under Irish field conditions*	
K. Davis	2016	*Aquatic Oomycetes of the Falkland Islands*	
K. Fletcher	2015	*Genetic investigations of Oomycetes associated with marine algae*	
C. Anunike	2015	*Deployment of calcium polysulphide for the remediation of chromite ore processing residues*	
M.N. Sarowar	2014	*Molecular characterisation of oomycetes from different aquatic environments.*	
J. Olewski	2013	*Effects of soil pH and plant material quality on soil mineral nitrogen dynamics and nitrous oxide production following addition of green manure to soil*	
H. K. Alzahrany	2012	*Molecular, phenotypic and functional assessment of hydrocarbon degrading microbial communities: applications in bioremediation*	

M.B. Herold	2011	*Significance of fungal and bacterial denitrification in arable soil*
D. Auty	2011	*Modelling the effects of forest management on the wood properties and branch characteristics of UK-grown Scots pine*
D. Lou-Hing	2010	*Arsenic in rice*: *the role of phosphate in sensitivity and the genetics behind shoot arsenic.*
E. Siasou	2010	*Interactions among a soil-borne pathogen, mycorrhizal fungi and rhizobacteria.*
L. Kruitbos	2009	*Influence of habitat on the behaviour of entomopathogenic nematodes.*
K. Owusu-Afriyie	2009	*Forest Fire incidence, Damage and Control Measures in Ghana.*
L. Villarreal-Ruiz	2006	*Biodiversity and ecology of native pinewood ectomycorrhizal fungi across a chronosequence and their in vitro interactions with ericaceous plants.*
P. Torr	2006	*Nematodes to control the large pine weevil*
N. Bouqellah	2005	*Biological control of powdery mildew (*Podosphaera xanthii*) on cucumber using Trilogy® and* Brevibacillus brevis.
J. E. Danaher	2005	*Prediction and manipulation of black dot fungus (*Colletotrichum coccodes*) on* Solanum tuberosum.
B.E.E. Tambe	2004	*Mycorrhizal status of* Gnetum *spp. in Cameroon.*
P. Kyritsis	2003	*Epidemiology and pathogenesis of mycelial soil-borne* Rhizoctonia solani *AG-3 on potatoes* (Solanum tuberosum).
I. Lazaraki	2003	*Integrated biological control of grey mould* (Botrytis cinerea) *on tomato using bacterial antagonists*.
E. Tsomlxoglou	2001	*Targeted* Bacillus *control for protected crops against the grey mould pathogen*, Botrytis cinerea.
M.S. Chidburee	1998	*Biological control of soil-borne disease in Soybean by denitrifying antagonistic bacteria: the possible role of reduced nitrogen compounds for control of plant pathogens.*
Z. Ashaari	1995	*The structure and properties of rattan in relation to treatment with boron preservatives.*
P.J. Mwitwa	1993	*Somatic Embryogenesis and Protoplast Isolation and Culture in* Picea sitchensis (Bong.) Carr.
J.H.R. Heuch	1991	*The Tissue Culture and Biology of Bamboos with Special Reference to* Dendrolcalamus hamiltonii.
S.K. Hull	1991	*An Investigation into the Causes of Dieback in Non-Woodland Ash Trees*.
D. Birt	1991	*Somatic embryogenesis in Conifers*

ADMINISTRATIVE DUTIES AND OTHER ACTIVITIES

Administrative duties

2010 – 2016	MSc Forestry Coordinator	School of Biological Sciences
2002 – 2005	School of Biological Sciences Management Team	School of Biological Sciences
2002 – 2004	Head of Academic Disciplines of Agriculture and Forestry	School of Biological Sciences
2002 – 2004	Teaching Committee	School of Biological Sciences
2002 – 2004	Postgraduate Committee	School of Biological Sciences
2002 – 2016	ERASMUS coordinator for Agriculture and Forestry	School of Biological Sciences
2000 – 2002	Management Team	Department of Agriculture & Forestry
2000 – 2002	Teaching Committee	Department of Agriculture & Forestry
1997 – 2000	Chair, Committee for Course and Curriculum Development	Department of Forestry
1989 – 2000	Convenor, Staff-Student Committee	Department of Forestry
1999	Faculty Level 1 Review Teaching Committee	Department of Forestry
1991 – 1995	Departmental Teaching Timetables	Department of Forestry
1993 – 1995	University Quincentenary Appeal Committee	Department of Forestry
1990 – 1994	Technical arrangements for field courses	Department of Forestry
1991 – 1993	Organisation and timetabling of research seminars	Department of Forestry
1991 – 1993	Reporter to the University News Letter	Department of Forestry
1992 – 1994	Craibstone Arboretum Committee	Department of Forestry

WORK OUTSIDE THE UNIVERSITY

Charity Work:

President of the Friends of the Cruickshank Botanic Gardens (since 2017). The role is to head the trust, which raises funds for special projects based in the Cruickshank Botanic Garden in Aberdeen.

Trustee of the Scottish Forestry Trust, which manages investments of approximately £2.5 million, using the income genereated to benefit forestry in a variety of ways, including research projects, general educational projects and extension work. I sit on the Research and Projects Committee of this Trust.

'University Principal's representative' (trustee) to The EM Cruickshank Trust (2002-2010), a charity which makes donations to students of rural subjects who have particular financial needs or difficulties.

Internal validation of forestry degree courses for the Scottish School of Forestry, University of the Highlands and Islands, Inverness.

From 2005-2008, I was an elected a board member and trustee of the British Society for Plant Pathology, the main organisation representing UK-based plant pathologists.

Extension work and public lectures: Fungal forays for local Nature/Conservation Groups, Botanical Societies and for the Forestry Commission. Lectures on tree physiology, tree pathology (particularly invawsive pests and pathogens), micropropagation and carnivorous plants to interested bodies.

Consultancy Work: Tree inspections for health/liability for the University, for private individuals and for Grampian Regional Council. Inspection and confirmation of dry rot in timbers for private home owners. Recently, I have been involved in consultancies for major land owners, concerning problems with the application of herbicides and with the highly damaging spread of *Phytophthora ramorum* on Japanese larch in the UK.

ACTIVE ROLE IN SOCIETY: Known locally, nationally and internationally as an expert on trees, in plant diseases, and in botanical/mycological issues in general.

DISSEMINATION OF SCIENTIFIC KNOWLEDGE THROUGH OTHER MEANS: Interviewed many times for BBC Radio, both national radio and BBC radio Scotland,

- a news item (*And Finally…*) on a giant puff ball found near to Aberdeen;
- '*Landward*', a programme dealing with rural affairs, about the management of Christmas trees;
- concerning the mushroom poisoning of the author Nicolas Evans (*The Horse Whisperer*) and family in Scotland in September 2008
- concerning a 'strange' white fungus-like growth from decaying beech wood.
- 29th October 2012 BBC Radio Scotland. Good Morning Scotland. 7.40 a.m.
- 7th November 2012: BBC Radio Scotland. Good Morning Scotland. 8.20 a.m.
- 9th November 2012: Radio Scotland Drivetime interview; BBC Radio 5 Live Drivetime interview.
- 13th December 2012: BBC Radio 4, Costing the Earth.
- Jan 2013 : Interviewed for BBC Radio 4 *Farming Today*
- May 2013: Interviewed for BBC Radio 4 *Farming Today*
- April 2013: Interviewed for 'Russia Today'
- July 2013: Interviewed for BBC Radio 4 *The Tree Scientist*
- June 2014: Interviewed for BBC Radio 4 *Farming Today*

Several appearance on National TV and on BBC Scotland News:

- 29th October 2012: BBC TV Scotland News.
- 4th November 2012: Sky News.
- 10th November 2012: BBC 2 Newsnight.
- 12th November 2012: BBC TV Scotland News.
- 20th November 2012: BBC The One Show.

- 9th December 2012: BBC1 Countryfile

Numerous interviews for national and local newspapers, particularly in the weeks immediately following the discovery of ash dieback in UK woodlands, October 2012. The local Aberdeenshire newspaper, *The Aberdeen Press and Journal*, frequently consults me on all matters relating to trees.

S. Woodward
21st March 2018