

Martyn James Wood | Curriculum Vitae

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DOB: 10/06/1988

Employment

Research Assistant / Teaching - Swansea University [2021 – present]

Key responsibilities: **1)** Give support in management and delivery of BANP research activities – eg. Develop **four** REF impact case studies (mosquito repellent, thrips attractant, new fumigant and *Metarhizium* based products), **2)** Successful and timely delivery of FUMIGATE project goals, **3)** Field validation and commercial development/patenting of novel VOC's and biological control agents, **4)** Co-supervision of MSc and project students alongside BANP staff and visitors, **5)** Compliance for BANP groups' ORETO accreditation (GLP), **6)** Assist with grant applications (eg. Innovate UK, Horizon Europe, Industry), **7)** Modular and practical teaching within biosciences for the department, **8)** Conception, continuation and delivery on industry projects, **9)** Key role in design of new labs for the new BIOHUB project at Swansea University, **10)** Preparation of at least 15 new publications in last 12 months – 3 published, 2 in press/review process, 6 complete pending patent authorisation for submission due to commercialisation of outputs, others in various stages of preparation.

Project Manager - Razbio Ltd., Swansea [2021]

Key responsibilities: **1)** Design and conduct extensive lab and field trials of disparate biopesticides (Fungal biocontrol agents, semiochemicals), **2)** Manage RCUK Innovate project on new thrips attractant, **3)** Manage GCRF project on monitoring and control of dengue mosquito – organize international symposium on mosquito control (8/4/21, >150 participants), **4)** Co-supervise 3 overseas MSc. students, **5)** Manage and provide training in *Metarhizium* mass production technologies, **6)** Lead role in SHAKE climate change programme – investment and funding opportunities for novel business ideas.

Teaching and Student Welfare Positions - Swansea University / 'The College' / Razbio Ltd. [2014-2022]

Key responsibilities: **1)** Coordinator for BIO016 Molecular Science & Biochemistry foundation module (2020), **2)** Coordinator for EMB1010C tutorial module (2018-21), **3)** Domestic and overseas co-supervision of MSc students, **4)** Contributor to BIO318 Biological Control of Invertebrate Pests **5)** Examination marking for 2nd and 3rd year students (2018-20), **6)** Welfare warden; responsible for mental health outreach and student welfare (2014-17).

Researcher and Rehabilitator - Gower Bird Hospital, Swansea [2017-2021]

Key responsibilities: **1)** Delivery of insect nutrition and avian malaria project goals with academic partners **2)** Secured funding from British Hedgehog Preservation Society/ Peoples Trust for Endangered Species (£2500, 2019) to investigate insect nutrition in the context of the hedgehog diet, **3)** Invited speaker at European Hedgehog Research Group conference, Hyde Park, 2019, **4)** Monitoring for wildlife disease (Integration with Animal and Plant Health Authority for screening), identification of new parasites (eg. filarial nematodes being assessed by Natural History Museum), **5)** Collaborating with Prof Butt on plant-based repellent for mosquitoes, ticks and midges. Patent (6096AP/GB) filed 2021. IP to be licensed to Rentokil Initial. Repellent equal to or better than current commercial repellents.

Education

PhD in Biological Sciences - Swansea University, UK [2011-2016]

Thesis entitled 'Developing tools to be used in IVM strategies for the control of mosquitoes' – remains under bar of access through to 2022 due to patent on repellent output and ongoing licensing arrangements with Rentokil Ltd. Focus throughout on natural product development.

BSc (Hons) in Zoology (2:1) - Swansea University, UK [2008-2011]

Dissertation entitled 'Efficacy of *Metarhizium anisopliae* as a control agent for *Ixodes ricinus* ticks' (1st class). Strains of *M. anisopliae* identified highly efficacious against ticks; subsequently shown to be effective against other disease vector species (mosquitoes and midges).

Experience

- Over 10 years' experience in academia and industry – focus on the development of innovative products and strategies for management of invertebrate pests of global social-economic importance. Innovations developed/in development include:
 - Novel plant-based repellent for use against arthropod vectors of disease (Patent filed, work ongoing with Rentokil Initial)
 - Novel plant-based attractant for thrips (Ongoing work with Razbio Ltd., Product to be launched 2022)
 - Development of environmentally friendly novo fumigants (Funded by SMART Expertise and industry, patents filed, prototypes successfully evaluated 2022)
 - Development of natural products as plant biostimulants (Funded by SMART Expertise and industry, prototypes successfully evaluated 2022)
 - Development of *Metarhizium* based products for plant protection and plant growth stimulation (In collaboration with industry partners, eg. Lallemand, Razbio Ltd., Russell Biosolutions). SMART Partnership grant application to be submitted 2022.
 - Developing tools for automated monitoring of agricultural pests (Part of Horizon Europe grant application and ongoing collaboration with Razbio Ltd.)
- **Key Technical skills:**
 - **Chemical Ecology:** GCMS, HPLC, EAG, olfactometry, light and fluorescence spectrophotometry, analytical chemistry, commercial semiochemical development including extraction and field evaluation of bioactive compounds from plants and other natural products.
 - **Biological control:** Axenic culture, liquid and solid mass production, designing and conducting bioassays against disparate invertebrate pests (eg. Insect, molluscs,

nematodes), development of formulation and application technologies, conducting ORETO compliant (ie. GLP and GEP) field trials.

- **Biostimulation:** Development of microbial agents (eg. *Metarhizium*) to stimulate plant growth and increase resilience to biotic and abiotic stress (eg. Drought, pests, pathogens, salinity, etc.), Development of formulations for delivery of biostimulants (hydrogels for seed and root coating).
 - **Ecology:** Radio tracking of birds (eg. Shelduck) and mammals (eg. Hedgehogs), wildlife parasitology (identification and quantification of endo and ecto parasites on live and dead specimens using a range of microscopy, biochemical and molecular techniques), maintenance of invertebrate cultures (eg. Mosquitoes, store grain pests, model species, molluscan pests, nematodes), animal welfare assessments, wildlife survey (determining spatial-temporal distribution of invertebrates and mammals in disparate habitats).
 - **IT:** Competent in most software packages for statistical analyses, graphical output, manuscript preparation and public dissemination (eg. Prism, SPSS, Excel, Word, PPT etc.)
- **Fieldwork experience:**
 - Field trials of biopesticides (*Metarhizium* based products, entomopathogenic fungi, entomopathogenic nematodes, semiochemicals and botanicals) in UK (vine weevil monitoring and control, thrips attractant, thrips optimised trap colouration, mosquito attractant and repellent), Tanzania (Mosquito control, mosquito attractants) and Turkey (thrips attractant, tick control, chestnut weevil, chestnut tortrix, mosquito attractants and repellents)
 - Field trials on microbial and chemical plant biostimulants (fungi and volatile organic compounds) in UK
 - Radio tracking (Shelduck tracking on marshland, hedgehog tracking) and invertebrate surveys (pitfall traps, sweep netting, quadrat counts, etc.)
- **Academic teaching experience:**
 - Module coordination for foundation module (BIO016 – Molecular Science and Biochemistry and EMB1010C – tutorial module) – lecturing, practical's and examination
 - Lectures contributed to BIO318 module – biological control of invertebrate pests
 - Undergraduate and postgraduate student co-supervision – UK and overseas
 - Individual and group tutorials
 - Examination marking (levels 0-3)

- Can create new modules: chemical ecology, integrated pest and vector management, analytical chemistry.
- Strong history in pastoral roles – welfare, etc.
- **Industry linkage** – key development partnerships with commercial entities along supply chain:
 - Manufacturers: Agrisense, Agrifutur, Biobest, Certis Europe, Lallemand, Rentokil Initial, Razbio Ltd., Russell Biosolutions, Russell IPM
 - Producers: WB Chambers (Large scale growers in UK and EU), EC, Drummond (Broad scope agricultural group), Cotswold Gold (Oilseed Rape producer), Maelor Forest nurseries (One of the largest tree producers in UK), Puffin Produce (Very important Welsh producer, famous for Pembrokeshire potatoes)
- **Dissemination activities including:**
 - Invited speaker at:
 - Joint DelPHI Workshop (Dar es Salaam, Tanzania, 2010)
 - International Biopesticides Symposium (Swansea University, UK, 2015)
 - European Hedgehog Research Group Symposium (London, UK, 2020)
 - BWRC annual conference (Edinburgh & Gloucester, UK, 2018, 2020)
 - New IPM Conference (Swansea, UK, 2022)
 - Organisational and operational roles at:
 - Joint DelPHI Workshop (Dar es Salaam, Tanzania, 2010)
 - Razbio International *Aedes* symposium (Online, 2021)
 - New IPM Conference (Swansea, UK, 2022)
 - Public engagement and citizen science roles performed for Gower Bird Hospital
 - Industrial and political outreach relating to ongoing research and symposia
- **Funding and grant application experience:**
 - Assistance developing Innovate UK project proposal in conjunction with Swansea University, CABI and Razbio Ltd. for project pertaining to natural product development and formulation of EPF - £788k (2022)
 - Lead presenter for SHAKE climate change funding programme on behalf of Razbio Ltd. – £140K investment opportunity (2021)
 - Steering group contributor for Horizon Europe application to call for innovative solutions for emerging plant pests - €7 million proposal
 - Small grant funding secured to investigate insect nutritional composition in the context of the hedgehog diet - £2500 from British Hedgehog Preservation Society/Peoples Trust for Endangered Species (2019)

- **Languages** – English (Native – fluent), Greek (Basic)
- **Full UK Driving License** – no penalty points

Publications

Published

- Abdullah, Z. S., Greenfield, B. P., Ficken, K. J., Taylor, J. W., Wood, M., & Butt, T. M. (2015). A new attractant for monitoring western flower thrips, *Frankliniella occidentalis* in protected crops. *SpringerPlus*, 4(1), 1-9. **(IF: 2.384)**
- Alkhaibari, A. M., Wood, M. J., & Butt, T. M. (2022). Optimising the application timing and dosage of *Metarhizium brunneum* (Hypocreales: Clavicipitaceae) as a biological control agent of *Aedes aegypti* (Diptera: Culicidae) larvae. *Journal of Medical Entomology*. **(IF: 2.435)**
- Allen, S., Greig, C., Rowson, B., Gasser, R. B., Jabbar, A., Morelli, S., Wood, M. & Forman, D. (2020). DNA Footprints: Using Parasites to Detect Elusive Animals, Proof of Principle in Hedgehogs. *Animals*, 10(8), 1420. **(IF: 3.231)**
- Butt, T. M., Wood, M., Taylor, J. W., Bakirci, S., Hazir, C., Ulug, D., & Hazir, S. (2016). Differential susceptibility of *Hyalomma excavatum* adults and nymphs to the entomopathogens *Metarhizium anisopliae* ARSEF 4556 and *Steinernema carpocapsae*. *International Journal of Pest Management*, 62(3), 261-266. **(IF: 1.907)**
- Dearden, A.E., Wood, M.J., Frennd, H.O., Butt, T.M., Allen, W.L., Visual modelling can optimise the appearance and capture efficiency of sticky traps used to manage insect pests. *Journal of Pest Science* (In-press: **IF: 5.918**)
- Wood, M.J., Butt, T.M., Kanagasooriyam, K. (2021) *Insect repellent composition* (GB2108798.6) UK Intellectual Property Office
- Wood, M. J., Kortsinoglou, A. M., Khoja, S., Kouvelis, V. N., Myrta, A., Midthassel, A., Loveridge, E. J., Butt, T. M. *Metarhizium brunneum* (Hypocreales: Clavicipitaceae) and its' derived volatile organic compounds as biostimulants of commercially valuable angiosperms and gymnosperms. *Journal of Fungi*. **(IF: 5.724)**
- Wood, M. J., Alkhaibari, A. M., & Butt, T. M. (2022). Stress-Mediated Responses of *Aedes aegypti* (Diptera: Culicidae) Larvae When Exposed to *Metarhizium brunneum* (Hypocreales: Clavicipitaceae) and *Toxorhynchites brevipalpis* (Diptera: Culicidae). *Journal of Medical Entomology*. **(IF: 2.435)**