

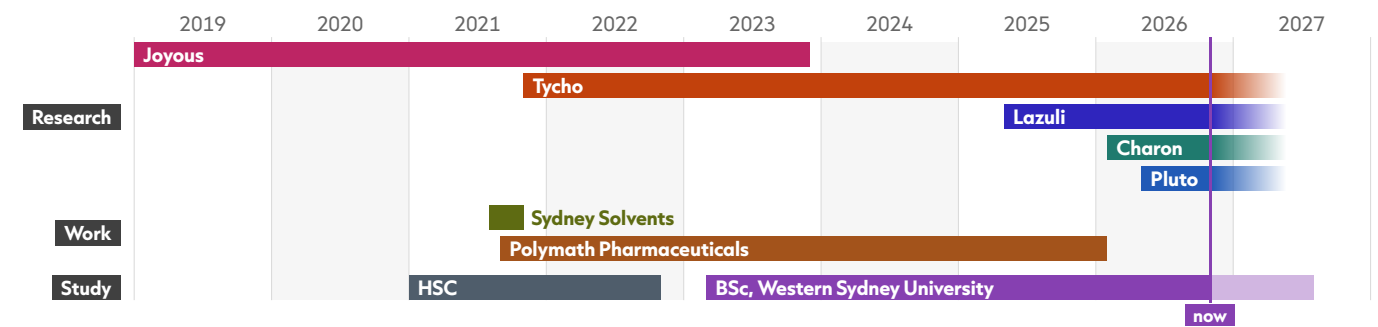
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I'm a curious science student studying a BSc in Chemistry with a minor in Infectious Disease and Pharmacology. I'm conducting independent research on the microbiology of former British nuclear test sites at Maralinga and Emu Field. Focused on melanised fungi, the details of all programs are available on the website. Seeking Honours and research placements in pharmaceutical, microbiological and environmental fields.



Research	3D reconstruction	Radiation mapping	Low-cost Instruments
2026	Project Charon: mapping British nuclear test sites		
nicholaseshunwilson.com/charon			
<ul style="list-style-type: none">■ Historical record of the British tests at Maralinga, Emu Field and the Monte Bello Islands: a schema-validated timeline dataset (63 elements) with all twelve major detonations dated to the day, the minor trial series, site markers and the cleanups and inquiries.■ Instrumentation: a Raspberry Pi logger fusing two RadiaCode gamma spectrometers with high-accuracy GNSS (in build), feeding a real-time SLAM 3D model with voxel estimates of radioactive sources.■ Designing a near-real-time reconstruction pipeline on feed-forward 3D models (DVL, VGGT, Pi3, MapAnything) for two modes: live UAV capture (target under 10 s per update) and unordered survey sets of 1,000+ images.■ Tahmoor quarry survey: 1,680 images processed in ArcGIS Drone2Map and exported to COLMAP for Gaussian splat training; <i>terrapin</i>, a Rust tool (about 3,800 lines) converting BlocksExchange XML to COLMAP, nerfstudio and Bundler formats.■ Radiation safety and logistics for specimen transport: cast-bismuth shielding design, point-kernel dose estimates, cabin dose-rate maps, and off-grid field power (EcoFlow Delta 3 Plus with solar panels).■ ENVL2007 case study, <i>Radiotrophs and Where to Find Them</i> (June 2026): Gaussian splatting and low-cost robots carrying dosimeters for mapping contaminated ground.			

Research	Metagenomics	Melanin	Radioprotection	Photomicrography
2026	Project Pluto: microbes as nuclear threats and tools			
nicholaseshunwilson.com/pluto				
<ul style="list-style-type: none">■ Metagenomic study design: 16S amplicon sequencing with random-forest classification (after MacGregor et al., 2024), currently weighing on-site field sequencing on an Oxford Nanopore MinION against WSU's Hawkesbury NGS Facility.■ Equipment:<ul style="list-style-type: none">■ Zymo Research Soil DNA kit■ a 1600CPS centrifuge■ Archimedes Em1 Field Microscope■ Photomicroscopy Z-mount■ Nikon Z5II■ OM TG-7■ Cast modular Bismuth/Tin shielding.■ A radiotolerant atlas: published growth thresholds and ideal doses for radiotrophic organisms, superimposed on historical contamination across Maralinga and Emu Field.■ BIOS2024 Policy brief, <i>Microbes as Threats and Tools for Australian Nuclear Infrastructure</i> (2026): microbial corrosion of reactors, military vessels and spacecraft, and three uses for extremophile pigments: radioresistant materials, biosensing and bioremediation, and radioprophylactics.				

Research	3D-Printing	OpenSCAD	ChemSCAD	LLMs
2021	Project Tycho: 3D-printed reactors and LLM-driven design			nicholaseshunwilson.com/tycho
<ul style="list-style-type: none">3D-printed microreactors modelled in OpenSCAD/ChemSCAD.Aim: language models that read synthesis literature and emit reactor CAD, with experimental results fed back into the design.Presented at the Deep Network presentation night (September 2025), first presented in November 2021.				
Research	Organic synthesis		Antimicrobials	
2019 - 2023	Project Joyous: β -nitrostyrene chemistry			nicholaseshunwilson.com/joyous
<ul style="list-style-type: none">Antimicrobial activity of β-nitrostyrenes, and synthetic routes to endogenous neurotransmitters.				
Experience	Laboratory supply		Independent projects	
2021 - 2026	Polymath Pharmaceuticals: founder			Sole trader, Sydney
<ul style="list-style-type: none">Laboratory chemical supply website, run with James Rowland Payne, and the umbrella for independent commercial projects. Sole-trader ABN held 2021 to 2026.				
Experience	Market research		Product testing	
2021	Sydney Solvents Pty Ltd: research assistant			Sydney
<ul style="list-style-type: none">Market research, product-related experiments and liaison with industrial suppliers.				
Education	Chemistry major		Infectious Disease and Pharmacology minor	
2023 - 2027	Bachelor of Science, Western Sydney University			Expected August 2027
<ul style="list-style-type: none">Units include Analytical Microbiology; Environmental Assessment and Analysis (EART2001); ENVL2007 (Gaussian splatting case study, NSW air quality assessment); Science of the Anthropocene (EART3006).				
Education	Chemistry	Biology	Investigating Science	
2021 - 2022	Higher School Certificate, Bradfield Senior College			St Leonards, NSW
Methods				
Lab	Aseptic technique, optical microscopy and photomicrography, organic synthesis, chemical handling and safety			
Field	Off-grid sampling logistics, solar-powered field equipment, specimen storage and transport			
Radiation	Gamma spectrometry (RadiaCode), bismuth shielding design, point-kernel dose estimates			
Survey	UAV and ground photogrammetry, ArcGIS Pro and Drone2Map, COLMAP and GLOMAP, Gaussian splatting (Brush, Spirula Studio, InstantSplat), 360° capture			
Computing	R, Rust, Python, SQL, PowerShell; Typst and CeTZ for documents and figures; Zotero			
Systems	Self-hosted research stack: Syncthing, Zotero WebDAV, Traccar GNSS on PostgreSQL, Cloudflare Tunnel, WireGuard			
Other work				
Glass	Glass from lunar regolith simulant (IFLRS-75, Interstellar Innovation) and bismuth borosilicate glass for shielding: small-scale melts, early stage.			
Air quality	Project Aeolus: an R pipeline on the NSW air quality API, with PM _{2.5} and PM ₁₀ exceedance heatmaps and limit-referenced charts.			
Outputs				
Site	nicholaseshunwilson.com: project pages, one-page briefs and the current CV			
Data	Raw and processed data from Charon and Pluto on request, with access-controlled downloads at data.nicholaseshunwilson.com			
Referees	Available on request			