

Institution: University of Aberdeen

Unit of Assessment: 15 (Archaeology)

1. Unit context and structure, research and impact strategy

Established in 2007, Archaeology at the University of Aberdeen (UoA) has grown rapidly and achieved many notable grant, publication and impact successes (see below). This success has come about despite the small size of the unit – averaging six FTE in the early part of the census period and increasing to ten (8 permanent, two fixed term, plus six postdoctoral researchers) at the census date. Our research vision centres on strengthening our distinctive research profile which focuses on the global Archaeology of the North and Bioarchaeological Science, leading to a wide global reach and research relevance (Figure 1). Our [main research themes](#) focus on:

The North: Aberdeen and Scotland are gateways to a vast region that extends across the northernmost third of the globe, generally marginal and cold-climate settings, and our research encompasses specialisms in Scotland and the North Atlantic, Scandinavia, North America and Northern Eurasia. Research areas include indigenous and community archaeology (**Hillerdal, Oliver**); early medieval kingship (**Noble**); Arctic archaeology (**Hillerdal, Britton, Knecht**); kinship and mortuary practices amongst the early farming communities in the north (**Crozier, Flink, Oxenham**); the earliest settlement of the North (principally Northern Europe and Russia (**Britton** and Dinnis); landscapes and mobility in Mongolia and northern China (**Wright**); ancient health, diet, disease, demography and mobility (**Oxenham, Britton**); and cultural heritage and politics of the north, particularly that of far right groups (**Niklasson**). Research in these areas has been funded by the AHRC, NERC, The Leverhulme Trust, international funding bodies and by philanthropic donations.



Figure 1: Research areas, field and lab sample sites and institutional collaborations of the Aberdeen group (Aberdeen=red dot)

Bioarchaeological Science: Bioarchaeological Science at Aberdeen seeks a better understanding past human and animal populations, human-animal-environmental relationships, change in past health, economies and socio-cultural behaviours. We have expertise in a range of specialist methods, including stable isotopes (**Britton**), ancient DNA (**Flink**) and osteoarchaeology (**Oxenham, Flink, Crozier**), making us a centre for multi-proxy bioarchaeological research. Specific research areas include herbivore palaeoecology in Late Pleistocene Europe (**Britton**); the bioarchaeology of early to high medieval northern Europe (**Britton**); precontact Arctic diet, subsistence and animal-human relationships (**Britton**);

reconstruction of health from human skeletal and dental remains and forensic anthropology (**Oxenham**); the bioarchaeology of care (**Oxenham, Crozier**); palaeodemography and human mobility (**Oxenham**) and (palaeo)genetics (**Flink**). The application of palynology, non-pollen microfossils and geochemistry is also facilitated through collaboration with colleagues in geography and postdoctoral positions within archaeology (**Mighall, Schofield**; postdoctoral students on Comparative Kingship; Alaska). Research in these areas has been funded by the AHRC, Leverhulme Trust and the British Academy.

The Unit focuses on addressing major international issues in interdisciplinary ways within the context of the overall institutional strategy [Aberdeen 2040](#) (see **REF5a**). Topics of research include palaeo-migration and identity; colonialism; indigenous issues and identities; climate change and human-environment interactions; the rise of hierarchical social relations and human health and care through time. Since REF2014, our research income has substantially increased (with over GBP3.4 million research spend in the current cycle) and our awards have included the first ever Leverhulme Leadership Award at the University of Aberdeen (**Noble**, 2017-22); the largest ever AHRC grant to the university awarded to **Knecht, Hillerdal** and **Britton** (2013-18) (delivered largely in the current assessment period); the first ever British Academy Global Professorship awarded to archaeology (**Oxenham**, 2020-24), a Leverhulme Major Fellowship (**Knecht**), and recently, a Philip Leverhulme Prize in Archaeology (**Britton**), along with a series of other grants and philanthropic donations. Our success has grown from a strong culture of research mentorship within the department and a concerted team effort to grow income and research specialisms through collaboration. The projects highlighted demonstrate the integration of the department's foci in the global north and bioarchaeology. They also demonstrate adherence to the university's interdisciplinary and international ethos, involving colleagues from a range of disciplines internally (Biological Sciences, Zoology, History, Education, Anthropology) and externally (see partnerships below, and Figure 1). Archaeology at Aberdeen has been included in the top 100 in the QS World rankings, the highest ranked department of our size (nearly all are at least twice the size of Aberdeen) and we also consistently outperform larger departments in national UK rankings (e.g. ranking 12th out of 32 departments in the latest Complete University Guide, with 96% for research intensity). At the last REF we were ranked the top research department within Scotland and 13th in the UK despite the department only being established in 2007.

Over the next five years two current Leverhulme grants will be brought to fruition (PleistoHERD; **Britton** and Comparative Kingship; **Noble**); the AHRC follow-on funding (**Hillerdal**, "Living Heritage Workshops"; GBP27K) has enabled new phases of the prestigious AHRC Alaska project, an initiative bolstered by the recent award of a Leverhulme Major Fellowship to **Knecht** ("Yup'ik culture before contact"; GBP57K 2020-23) and a grant to provide a digital museum for the Nunalleq collection (**Hillerdal**, "Nunalleq Culture and Archaeology Center Digital Museum"; GBP100K 2021-22). **Oxenham's** British Academy Global Professorship ("Human Stress, Resilience and Adaptation in Ancient Northern Ireland and Scotland"; GBP750K) enables a study of human health in Scotland's past by working with the university's unique collections. The Global Professorship scheme is specifically geared towards upskilling UK academia in new approaches, and the position will also substantially grow the Unit's new research focus in Osteoarchaeology. New grants will be delivered in the next REF period – a GBP251K grant has been recently awarded to **Noble** for a project on coastal erosion at Burghead fort, the largest Pictish fort of its kind ("The Citadel Project: Rescue- and Research-led Investigations at a Pictish Elite Centre"; Historic Environment Scotland 2021-24). With two new members of staff (**Niklasson, Flink**) and new research specialisms (cultural heritage and aDNA), we will target European funding for projects that look at the impact of EU funding and the far right on archaeology, as well as scientific and public understanding of ancient genetic data. With continuing access to European funding confirmed for the next five years these sources in particular will be targeted alongside maintaining our excellent record of UK grant capture.

The Unit has a strong ethos of public engagement and supporting community-embedded research, working with schools and communities from Scotland to Alaska. Initiatives have included the AHRC-funded Alaska project which, in 2018, led to the opening of the [Nunalleq](#)

[Culture and Archaeology Center \(NCAC\)](#) in Quinhagak Alaska – a museum and heritage centre established in partnership with the University and the village corporation Qanirtuuq Inc. In 2019, the centre was nominated by Senator Lisa Murkowski for the 2019 National Medal for Museum Service by the Institute of Museum and Library Services, USA. Other initiatives in Alaska have included cultural events and an award-winning digital education pack. The project has provided inspiration to award-winning film makers, authors and the community itself with the first [traditional dances](#) held in the village for almost 100 years and Yup'ik artists working with motifs and ideas inspired by finds from the dig. Hillerdal and colleagues won the Archaeological Institute of America Award for [Outstanding Work in Digital Archaeology](#) for the [educational package](#) delivered as part of the Nunalleq project.

In the UK, the Northern Picts and Comparative Kingship projects have succeeded in showcasing Pictish culture with broadcast media engaging millions (e.g., [BBC In Our Time](#) over 2 million listeners; BBC Digging for Britain, 2 million viewers) and museum exhibitions viewed by tens of thousands. The Kingship project helped deliver national strategic aims, with Historic Environment Scotland describing the project as having “a transformative effect” on the study area. It provided key contributions to the “Encouraging Greater Engagement” aim of Scotland’s Archaeology Strategy and the HES corporate plan. The Northern Picts/Comparative Kingship project is nominated for research project of the year in the [Current Archaeology Awards](#).

The Unit has worked on [publicly-facing projects](#) funded by the Heritage Lottery fund (e.g., [The King’s Dig](#); [Hungry Histories](#) and co-created research initiatives within the Aberdeenshire area (e.g., the [Bennachie Landscape project](#))). The high level of public engagement is reflected by the fact that the University Principal’s Prize for Public Engagement has been won by three members of the Unit in the last seven years – **Knecht** (2014), **Oliver** (2015) and **Noble** (2016) and one of our PhD students won the early career prize in 2020 (Czére). All projects involved working closely with the university [Public Engagement for Research Unit](#) (see **REF5a**). The department is committed to wide dissemination of our research and profile. **Britton** and **Wright** run the Unit’s [Twitter](#) feed and forward stories to the school social media team. **Noble** runs the highly successful Northern Picts [Facebook](#) and [Twitter](#) accounts (over 12,000 followers) and recent social media accounts have been set up for the [Osteoarchaeologys](#) and [aDNA](#) labs.

We aim to make all our research openly accessible, with project data archived with relevant national research repositories on completion of the work (e.g., ADS, National Record for the Historic Environment). A dedicated scholarly communications team in the library helps researchers facilitate open access publication and data dissemination (see **REF5a**). [Popular versions of our research](#) have been published online as articles (e.g., [The Conversation](#) podcasts; [BBC History magazine](#) podcast on the Picts; online recording of the Picts BBC Radio 4 [In Our Time](#)) and popular books and booklets (e.g., [King In the North](#) **Noble**, Birlinn press – over 3000 copies have been sold and it reached #1 in the History of Scotland chart on Amazon). A [blog](#) and [learning resources](#) for schools have also been produced by the Alaska project and an [app](#) was produced as part of the Bennachie Landscapes project.

We have a [strong ethos of research ethics](#) with our research involving human remains and collaborations with indigenous and community-based researchers. **Crozier** plays a leading role in our school ethics committee and the ethical review process for staff and students (2018-). The school team is supported by the Dean of Research Governance and Cultural Strategy at the central University level (see **REF5a**). **Oxenham** has been involved in assessing curated human indigenous material in Scotland for imminent repatriation to Australia. Moreover, both **Oxenham** and **Crozier** have been very active in volunteering their expertise in the location, identification and repatriation of WWI and WWII casualties in the European and Asia-Pacific theatres of conflict. **Oxenham** received a Silver Commendation from the Deputy Chief of Army (Australia) for his volunteer work in this area. In our work we follow all [professional standards](#) on ethics, safety and conduct, and at the University all members of staff are trained in research ethics, equality and diversity and unconscious bias at a University and School level.

Our focus on the Archaeology of the North has led to a range of major research collaborations with institutions of the global north, including past collaborations with the University of Hokkaido, Japan (**Noble, Oliver, Knecht**) and current collaboration with, for example, the National University and Academy of Sciences of Mongolia (Ulaanbaatar) and Yale University (USA) (**Wright**); collaborations with Simon Fraser University, Memorial University and Laval University, Canada (**Britton** and **Oliver**); the University of Uppsala, Sweden (**Hillerdal, Price**) and research institutions such as CNRS Nanterre and MPI-EVA, Leipzig (**Britton**). We also maintain strong links with numerous institutions and research organisations within Scotland and the UK (e.g., the Scottish Universities Environment Research Centre - SUERC). In recent years, we also established ongoing collaborations with the Universities of Cantabria (**Britton**) in Spain and now a growing research base in southeast Asia including Sun Yat-sen University (PRC) (**Wright**), The Institute of Archaeology, Vietnam and the Sapporo Medical University, Japan (**Oxenham**). We also collaborate with the University of Otago, New Zealand; the Australian National University (**Oxenham**); and the University of Philippines (Diliman) (**Crozier, Oxenham**). In addition, **Oxenham** is an Honorary Research Fellow with the International Research Center for Bioarchaeology, Jilin University, China.

The Unit is strongly committed to supporting interdisciplinary research and leads two major Leverhulme funded projects involving diverse researchers including postdoctoral students in History and Palaeoecology (Comparative Kingship, **Noble**) and spatial ecologists in the case of PleistoHERD (**Britton**). Our two most recent appointments in the Unit reflect an inter- and cross-disciplinary ethos with new research areas in Cultural Heritage (linking with Education, Anthropology and History) and Biomolecular Archaeology (Biological Science, the Medical School and Zoology).

2. People

Strategic investments in people have focused on both the retention and growth of talent. There were 6 FTE in the Unit for the majority of the assessment period, which grew to 10 FTE at the census date. **Noble** was promoted to Reader (2015) and Professor (2019) and was Head of Department (2016-20); **Britton** was promoted to Senior Lecturer (2016) and became Head of Department in 2020. **Wright**, initially hired as part of an endowment for Chinese Civilisation through philanthropic donations, was promoted to a permanent lectureship as part of the internationalisation strategy of the Department. Three new permanent appointments have been made since 2019 along with two major fellowships. **Crozier** was appointed in 2018 to provide expertise in osteoarchaeology and to maximise the research use of the vast osteoarchaeology collections held at the University's Marischal Museum. **Flink**, was appointed to further promote research on the University collections and forge links with Biological Sciences and the Medical School where expertise in DNA (human and animal), anatomy and medical humanities provides strong synergies. **Niklasson**, appointed in 2020 to take up a new Lectureship in Cultural Heritage, enhances research links with Anthropology, Education, History and the University Museums Service.

These appointments have been further strengthened by the award of the British Academy Global Professorship to **Oxenham**, one of only nine awards in 2019. Oxenham will add to the bioarchaeological expertise and provide new pioneering techniques utilising cutting-edge developments in ancient skeletal analysis to assess health and stress over the last 6,000 years. Oxenham along with **Britton, Crozier** and **Flink** bring together an international competitive pool of expertise and consolidate Aberdeen's position as leaders in bioarchaeological research in Scotland. **Knecht** took up a three-year Major Research Fellowship (2020-23) funded by the Leverhulme Trust. This award brought in a three-year lectureship to the department in September 2020 (Dinnis). The Comparative Kingship, PleistoHERD and the Oxenham's Global Professorship projects have brought eight postdoctoral positions to the department since 2017. These major research grants, in addition to the new lectureships, have more than doubled the research capacity of the department.

Since 2013 the staffing changes have also included some departures. The founder of the department, **Price**, was awarded Distinguished Professorship (*rådsprofessor*) at the University of Uppsala, supported by the Swedish Research Council. **Dobney**, Head of Department until 2016 is now Head of School at the University of Sydney, Australia. **Milek** moved to Durham, taking charge of the Geoarchaeology laboratories at the University in 2017. Our honorary staff members include former members of staff and postdoctoral researchers and professional practitioners, all of whom are providing important professional and research connections for our staff and students. This is testament to the collegiality and research bonds created at Aberdeen and provides opportunities for collaborative research and training.

The Unit has a strong, proactive system of research development and mentorship. Research time is prioritised wherever possible by grouping teaching into blocks and helping colleagues during times when major grant and publication deadlines are due. This has included school funded research sabbaticals (**Milek**), along with externally funded research leave: **Noble**: AHRC (Forteviot monograph); **Knecht**: Leverhulme (Nunalleq monograph 2023); **Price**: Leverhulme (New edition of *The Viking Way*); **Britton**: Leverhulme (PleistoHERD project). Biannual research meetings are held with all staff members (including postdoctoral students) and the head of the Unit and Research Theme Leaders (currently **Noble** – Archaeology of the North; **Britton** – Bioarchaeological Science).

Early career researchers have reduced teaching loads and a mentoring system with a senior researcher during a three-year probation period. Wherever possible, Unit funds, allocated by the Research Lead and Head of Department are used to support departmental research with consumables and lab supplies, conference attendance, image fees for publication etc. There is a rigorous peer review system in place with at least two staff members reviewing applications in addition to the Grants Academy (see **REF5a**), which has proved very successful in honing applications, leading to a high success rate for submitted applications. Annual research away days help promote a supportive research culture and help identify research synergies between staff members. Postdoctoral researchers are included in these meetings, helping to create an inclusive and supportive environment. Our annual reviews discuss career development, training and future plans.

Annual appraisals of staff progress underpin staff development in the Unit and staff are encouraged to apply for promotion through the annual University application process. This has facilitated strong academic positions for members of staff departing the Unit and provided a crucial springboard for internal promotion of junior staff (i.e., promotions for **Noble** and **Britton**) and the completion of probation (e.g. **Wright** and **Crozier**).

The Unit has made explicit efforts to work across disciplinary boundaries and to build collaborative partnerships. To that end, every member of staff has project partners within Aberdeen (e.g., researchers from History, Education, Anthropology, Medical School, Biological Sciences, Geology and Geography), and as highlighted earlier, universities and institutions across the world including the UK, Europe, North America and Asia.

The Department has a 50:50 gender split amongst permanent staff (4:4), as a result of recent recruitment. **Hillerdal** is a member of the school Equality and Diversity Committee and has contributed to the successful Athena SWAN Bronze Award application for the School, awarded in 2018. In 2020, **Britton** became the first female Head of Department in over 100 years of Geoscience at Aberdeen. Teaching cover has been fully funded by the university during three periods of family leave within the department and teaching loads have been reduced where possible for returning members of staff. These measures are in line with broader university policy on the impacts of caring and enabling flexible work implemented through the Academic Line Management System (see **REF5a**).

In preparing this submission, the Unit complied fully with the institutional Code of Practice and with the commitments we have made as a signatory of the San Francisco Declaration on Research Assessment (DORA). Outputs were reviewed by at least two internal and/or external

reviewers and selected strictly on the basis of quality. Choices between papers of equal grade were informed by detailed comments from the reviewers. The overall attribution profile is broadly balanced between male/female researchers and takes account of a number of periods of family-related leave.

Research students

The Unit has increased its number of PhD students, with 15 current students and 40 completed during the REF census period (Co-supervisor shares: 22.82). The Unit has an excellent track record of obtaining PhD funding. In the past two years alone we have had three Scottish Graduate School for Arts and Humanities (SGSAH) AHRC studentships, a Leverhulme funded PhD studentship, three NERC funded QUADRAT DTP studentships and a highly prestigious Carnegie Trust for the Universities of Scotland studentships. All research students have a supervision team comprising of at least two members of academic staff who provide both academic and pastoral support. Students often have a second or third supervisor from a university or a museum-based partner (e.g., the partnership with Queen's University Belfast involved in every QUADRAT studentship; supervision from National Museum Scotland, Historic Environment Scotland and SUERC for Leverhulme and AHRC studentships).

Research student recruitment has focused on SGSAH opportunities; the prestigious Carnegie Trust for the Universities of Scotland studentships; our involvement in QUADRAT DTP (a partnership between the University of Aberdeen and Queen's University Belfast) and part-funded studentships from Historic Environment Scotland (HES) and other industry partners. Nine of our current PGR students are fully funded externally by AHRC, Carnegie Trust and NERC.

The University's Postgraduate Research School provides a structured training framework that provides basic compulsory supervisor training along with masterclasses, and regular refresher training. The School oversees six monthly progress reviews, with each PhD student assigned a progress review panel when they commence their studies. Staff and students also have access to funding, training and support through the [University Postgraduate Research School](#) (see **REF5a**) and students (all funded and unfunded) are able access the training opportunities through the [SGSAH](#) and the NERC funded QUADRAT scheme. Our students have helped organize training events through SGSAH and [QUADRAT](#). PhD students are strongly encouraged to undertake work placements, including placements at SUERC and Historic Environment Scotland. Historic Environment Scotland are regular contributors to PhD student lab costs and Dr Lisa Brown, Head of Archaeological Science at HES, acts as supervisor on two of our PhDs. Progression at PhD level is contingent upon achieving certain milestones such as a formal research presentation to the School and successful performance at progress review meetings. Our students comprise a good gender balance (with more female than male students currently) and represent a range of career stages from recent graduates to retirees.

Through a series of agreements and other formal collaborations, the Unit has encouraged and implemented joint research and exchange programmes that have significantly benefited postgraduate students (e.g., **Britton's** students and MPI-EVA, Leipzig; **Noble, Britton** and **Wright** joint studentships with Queen's University Belfast). In addition, staff regularly serve as external supervisors on PhDs elsewhere in the UK and internationally: **Wright** co-supervises students at Birmingham, Pittsburgh (USA), McGill (Canada), Jilin University (China) and CAU (Kiel). **Noble** is external supervisor for students at Durham, Chicago (USA) and McMaster (Canada). **Britton** is currently supervising external students in Liverpool and Paris (Sorbonne); **Crozier** supervises two students and **Oxenham** is the primary supervisor of six PhD students at The ANU (Australia). **Flink** serves as main supervisor for a student at Liverpool John Moores University. Our interdisciplinary agenda is also articulated in the studentships that have been co-supervised (and in some case jointly funded) across the disciplines within the School and other disciplines in Aberdeen (e.g., Anthropology, Biology and Education).

Research students are regularly embedded within wider research projects, for example, Comparative Kingship, Northern Picts and PleistoHERD. They also have equal access to Unit

research resources such as the Osteoarchaeology lab at Marischal Museum and aDNA, isotope and faunal labs within St Mary's Building. Being associated with these projects has brought opportunities for placements abroad, including research visits to Memorial University Newfoundland and MPI-EVA, Leipzig.

Almost all our students incorporate lab or field-based work that has marked Aberdeen graduates out in a competitive job market with many of the recent graduates walking straight into postdoctoral studentships or commercial archaeology positions. Many of our PhD students have gone on to successful academic and professional careers, for example, lectureships in Stavanger ([Mooney](#)), postdoctoral positions in Aarhus ([Wouters](#)), SUERC University of Glasgow (Stratigos); commercial archaeology senior positions ([Christie](#), [Hatherley](#), [Mitchell](#)); and the third sector, for example, CEO at [YWCA Scotland – The Young Women's Movement](#) ([Kupiec](#)). Two of our graduates have been appointed to tenure-track posts at Memorial University ([Forbes](#), Ledger (Palaeoecology) and two others have gone onto public archaeology roles in Scotland ([Lindsay](#), Perth & Kinross Heritage Trust; [Carlisle](#), Aberdeen Museums Service).

Almost every week during term time talks are organised through the Department of Archaeology Northern Archaeology Seminar Series (NARSS), featuring national and international invited speakers. Final year undergraduate students also present at NARSS. Through our hosting of the Society of Antiquaries Northeast branch, we also facilitate networking for our staff and students with archaeology professionals and enthusiasts across Scotland and beyond. Our students are also encouraged to develop new research trajectories and applications, including developing successful small grant applications (e.g., Postdoc Masson-MacLean, AEA small grant holder) and outreach activities, including programmes of Heritage Lottery-funded events (e.g., PhD Czere, Hungry Histories). Our students are supported by the university's [Public Engagement with Research Unit](#) (see [REF5a](#)) in developing outreach activities, including participating in the British Science Festival, May Festival, European Researchers Night and "Cell Block Science" – an initiative educating prison inmates in the region.

3. Income, infrastructure and facilities

i. Income

The unit has seen significant growth in research spend during the census period and since the last REF (again factoring in that we were 6 FTE until recently). Over the last seven years the Unit's research spend was over GBP3.4 million. Research income is vital to the sustainability of the Unit, and grant acquisition and funding strategy is supported by R&I's Grants Academy (see [REF5a](#)), and dedicated support by a Business Development Officer. The Grants Academy makes available pump priming for interdisciplinary and knowledge exchange activities; for example, **Hillerdal** was recipient of a pump priming award in 2016; and in 2015 **Dobney** received funds to explore research synergies with medical mycologists.

Successful major awards include: the first ever Leadership Award for the university, awarded to **Noble** from the Leverhulme Trust for an interdisciplinary project examining early medieval polities in Scotland and Ireland ('Comparative Kingship: the early medieval kingdoms of northern Britain and Ireland', 2017–22; GBP970K). For an archaeological and palaeoecological study of the Picts **Noble** has received income ('Northern Picts', 2012– ; GBP500K+) from private donations and from Historic Environment Scotland. In 2020 **Noble** was awarded GBP251,149 from Historic Environment Scotland to tackle climate change-induced erosion at the iconic Pictish fort of Burghead with an important programme of excavation and public engagement ("The Citadel Project: Rescue- and Research-led Investigations at a Pictish Elite Centre", 2021–24). **Knecht**, **Britton** and **Hillerdal** were awarded GBP1.1.m from the AHRC to enable research on a settlement in Alaska during the Little Ice Age. The Alaska project has led to follow-on funding for **Britton** and **Hillerdal** (GBP140K), and most recently, GBP100K has been awarded to **Hillerdal** ("Nunalleq Culture and Archaeology Center Digital Museum", 2021–22). GBP287K was awarded to **Britton** and **Wright** for herbivore ecologies in the Late Pleistocene (PleistoHERD, 2018–22), an inter-disciplinary project that involves international collaborations. **Knecht** began a three-year Leverhulme Major Fellowship ("Yup'ik culture before contact", 2020–

23; GBP57K) in July 2020 to bring the internationally important excavations and finds assemblage from Nunalleq, Alaska to publication. The prestigious British Academy Global Professorship (**Oxenham**, “Human Stress, Resilience and Adaptation in Ancient NorthernGBPIreland and Scotland”, 2019–23; GBP750K), will involve the first ever multi-period study of human health in Scotland’s past. **Oxenham’s** British Academy Project utilises the rich collections of human remains at the University of Aberdeen along with collections from regional and national museums in Ireland and Scotland.

Aberdeen researchers also play major roles in projects with PIs in international institutions. **Wright**, for example, is funded as part of the AHRC Understanding Cities in Premodern Northeast Asia Project based at the University of Birmingham (GBP243K, GBP130K to Aberdeen); was a co-director of the SSHRC (Canadian) funded Kitan-Liao Archaeology and History Project based at McGill University; and director of the Dornod Mongol Survey, conducted in collaboration with the Archaeology Department of the Mongolian Academy of Sciences Institute of History and Yale University. Funding for this collaboration is provided primarily by the National Endowment for the Humanities (USA: \$221K). Oxenham has been appointed to the External Advisory Board of The Baikal Archaeology Project (Social Sciences and Humanities Research Council of Canada, C\$2.5m, 2018-2025). The research talent and innovation amongst the Unit’s researchers was further confirmed by the award of a prestigious Philip Leverhulme Prize in Archaeology to **Britton** (GBP100K).

ii. Infrastructure and facilities

The Unit has seen significant institutional investment in new labs on campus and at a new development at Marischal College in the city centre. Support from the AHRC Alaska grant enabled a brand-new lab to be equipped with significant cold storage and conservation equipment and consumables. The estimated 100,000 piece assemblage from the Nunalleq site that has unprecedented preservation of artefacts and ecofacts including world class examples of masks, dolls, grass basketry and hunting equipment from pre-contact Alaska, was conserved in Aberdeen before being returned to the Nunalleq community at the purpose-built [Nunalleq Culture and Archaeology Center \(NCAC\)](#) in Quinhagak Alaska.

Crozier’s appointment represents significant investment in establishing the Marischal College Museum Resource Centre for the study of the university’s extensive human remains collections with the Marischal Osteoarchaeology Research and Teaching Lab ([MORTL](#)). Within MORTL the University’s collections of over 1,000 human skeletons, one of the largest collections in Scotland, forms a unique focus for research initiatives. The lab includes a dedicated osteology processing room (specialist wash, dry and curation facilities) as well as benching, microscopes and skeletal recording setups. Additional repurposed facilities include a series of research spaces (for PGR, Post-doctoral students and visiting scholars) that are shared between archaeology and other departments (e.g., Anthropology and Education). Crozier has doubled the teaching and research collections with two nationally significant medieval assemblages from Aberdeen and Perth added to the collections since 2018 (MNI=1100).

On the Old Aberdeen campus researchers have access to several dedicated labs and workspaces. These include an isotope preparation facility, zooarchaeology lab, pollen preparation lab, soil processing lab and two dedicated artefact processing rooms. The zooarchaeology lab has extensive reference collections from both University museum collections and donated collections (e.g., Professor Keith **Dobney’s** personal collection built up over 40 years). This is one of the most comprehensive zoological comparative reference collections for the analysis of archaeological bone assemblages in the UK and includes wild and domesticate mammals and birds, fish and amphibians as well as teaching and research faunal material.

Flink’s appointment resulted in the setting up of an Ancient DNA laboratory, the only example in Scotland. The dedicated ancient DNA (and low copy DNA) facility is accessible for staff and students across the University via links to the [Centre for Genome-Enabled Biology and Medicine](#). The aDNA lab has two dedicated UV-enabled ISO Class-4 cabinets, one UV-enabled

still air PCR cabinet and the capabilities to extract DNA directly from bone, soil, sediments or other similarly sensitive materials. The laboratory is Next-Generation Sequencing (NGS)-enabled, meaning that researchers can go through the process from sample to DNA extraction to sequencing-ready NGS libraries in-house. Some of the projects using this facility to date include Whole Genome Sequencing (WGS) of single cell archaea, WGS of herbarium samples, rRNA gene amplicon sequencing of non-modern stool samples, fish vertebrae, organic temper and reindeer DNA and WGS of ancient DNA from pigs.

The Archaeological Chemistry (Isotope) Laboratories were established in Aberdeen by **Britton** in 2010 and consist of three connected dry and wet laboratories for the preparation of archaeological skeletal materials and soft tissues ahead of multi-isotope analysis. This includes facilities for micro-drilling, sample cleaning, demineralisation, filtration, freeze drying and weighing out samples ahead of analysis. The Isotope Group also makes use of a shared HF-approved facility in the same building (the pollen lab) to undertake phosphate precipitations ahead of oxygen isotope analysis, and the trace element facilities in the Department of Chemistry. Mass spectrometry is carried out in-house in the School of Biological Sciences (carbon, nitrogen), as well as at **Britton's** secondary affiliation in Leipzig, Germany (strontium, oxygen), at SUERC (carbon, nitrogen, sulphur) or with key collaborating institutes (e.g., Memorial University, Newfoundland; laser ablation strontium). Use of these facilities often includes training, and PGRs from the isotope group undertake secondments for mass spectrometry or are trained in-house.

Archaeology staff and postdoctoral students also make use of the School pollen prep lab that houses a series of Nikon E600, E400 and E200 high-magnification binocular microscopes and Nikon SMZs for microfossils, macrofossils and insect identification. The Unit also has access to a new range of digital microscopes, a portable Xrf and a SEM shared with the School of Biological Sciences.

The Unit includes very active fieldworkers and has access to a dedicated field equipment room that includes full digging and post-excavation kits. The Unit has also invested in a broad spectrum of geophysical equipment including a resistivity meter (Geoscan), magnetometry array (Bartington), and recently acquired a Sensys MAGNETO® MXPDA cart-based magnetometer system equipped with a RTK DGPS. This is the most advanced magnetometer system on the market, the only one in Scotland and the only university-based setup in the UK. We also have access to a laser scanner and Ground Penetrating radar setup through our geology colleagues. Within the department there is a high-quality geomatics setup with a Phantom 4 and Mavic drones with full licences for photogrammetry, GIS and image processing.

4. Collaboration and contribution to the research base, economy and society

i Collaboration

Northern Archaeology: **Knecht, Hillerdal** and **Knecht** have a series of community and academic collaborations as part of the Nunalleq project. This includes academic institutions who provided in-kind funding and analyses as part of the initial large AHRC project (e.g. UBC and Memorial University, Canada); formal partnerships with CNRS-Nanterre, France and the University of Copenhagen, Denmark as part of the AHRC-LabEX follow-on project (**Britton**), which brought together techno-culture and bioarchaeological specialists; and an ongoing partnership with the University of Dundee, UK, on the AHRC-funded Digital Museum (**Hillerdal**).

Noble's Comparative Kingship project collaborates with SUERC on radiocarbon dating, and with Queen's University Belfast and University College Dublin on internationally significant early royal sites in Ireland and Scotland. The Royal Residences Network (AHRC funded; **Noble** Co-I with Thomas, University of Reading) involved scholars across the UK, Western Europe and Scandinavia. Looking east, **Wright** is Co-PI of several collaborations in Asia including the medieval focused Understanding Cities in Premodern Northeast Asia Project with Prof. Naomi Standen (Birmingham) this collaboration has included colleagues from McGill University (Canada), Jilin University (PRC), the Inner Mongolian Provincial Archaeological Institute (PRC) and the Chinese Academy of Social Sciences. **Wright** is also one of three directors of the Bronze and Iron Age centred Dornod Mongol Survey, working with the Archaeology Department of the Mongolian Academy of Sciences, the National University of Mongolia, Yale University, University of Texas (both USA), Trent University (Canada) and Christian Albrechts Universität Kiel (Germany). **Wright** and the DMS also contribute to the ERC funded ASIAPAST project based at Kiel and is a principal member of the Chengdu Plain Archaeological Project in in PR China, working with Flad, Harvard University (USA) and Academia Sinica (ROC), examining the emergence of complex society in China's most fertile region. He is Assistant Director of the Keros-Naxos Seaways project led by Renfrew (University of Cambridge) examining landscapes and seascapes in the Aegean. **Wright** also collaborates with Jackson (University of Cincinnati, USA) on spatial archaeology of small-scale settlements in Maya Mesomeric. In Scandinavia, **Niklasson** facilitated exchanges with the Norwegian Institute of Cultural Heritage Research (Hølleland) and the Centre for Critical Heritage Studies at Stockholm University, Sweden (Källén). Her long-time collaboration with Hølleland focuses on method development in heritage studies and heritage policies of Scandinavian far-right political parties. Work with Källén looks at the development a new international research centre for critical heritage studies. In North America, **Flink** is working with Forbes and Ledger (Memorial University, Canada) on excavations at the World Heritage site of L'Anse aux Meadows in Newfoundland, Canada. **Knecht, Hillerdal** and **Britton** have a wide collaborative network for Nunalleq, both for the initial AHRC-funded project (e.g. UBC; Memorial University) and for AHRC-LabEX/AHRC-funded follow-on projects (e.g. CNRS-Nanterre, France; the University of Copenhagen, Denmark; University of Dundee UK).

Within our Bioarchaeology theme our collaborations include, through **Britton**, a long-term collaboration with the Max Planck Institute for Evolutionary Anthropology (MPI-EVA) in Leipzig, Germany, where she works on a range of projects around French and German Palaeolithic sites and the co-establishment of an oxygen isotope research group. **Flink** is working on ancient DNA of wolves and dogs and Pictish genomes as part of a collaborative network that includes the Centre for Paleogenetics (Sweden), and the Crick Institute (UK). He is also collaborating with Larson (University of Oxford) and Frantz (Queen Mary University) on pig domestication and wild boar genomics on a Leverhulme/British Academy grant. Leverhulme funded PleistoHERD project (**Britton** PI, **Wright** Co-I) involves partnerships with the University of Leiden (Netherlands), the Natural History Museum, Paris and the University of Bordeaux (both France). The project links to Palaeolithic field projects led by the MPI-EVA. Further links with Grimes (Memorial University, Canada) have led to exchanges of PhD students. PleistoHERD has brought together community and spatial ecologists who work with modern animals (University of Quebec, Canada) and archaeologists. **Britton's** ALLY project (funded by AHRC and LABEX) is also uniquely collaborative involving Co-PIs in France and the UK and the mutual access to bioarchaeological collections from Nunalleq. In East Asia, **Oxenham** has extensive collaborative networks in East Asia (China and Japan), Southeast Asia (Philippines and Vietnam primarily) and Australasia. He also has collaborative links with the Department of Scottish History and Archaeology, National Museums Scotland and the University of the Highlands and Islands. His establishment of research hubs, such as the Centre for Palaeodemography and Palaeoepidemiology, are attracting students to the UK for Scottish focussed research projects. He has recently co-established a Centre for Osteoarchaeology in the North Atlantic (CONA), run by the University of Aberdeen, Queens University Belfast, and the Australian National University.

ii Contribution to the economy and society

Our research involves active engagement with community groups in the UK and indigenous groups in North America. As part of their Alaska project **Knecht**, **Hillerdal** and **Britton** have been collaborating since 2009 with Native Corporation Qanirtuuq Inc. and the indigenous Yup'ik village of Quinhagak, focusing on recovering archaeological material from an endangered archaeological site. The collection is now the largest collection of pre-contact material ever recovered from Alaska and contains many spectacular art pieces and internationally important artefacts and ecofacts, which prompted the nomination in 2019 for the 2019 National Medal for the subsequent housing of the collection in Quinhagak. **Knecht** also co-directs the newly established culture and archaeological centre in Quinhagak which serves as a remote research station every summer for students from Aberdeen and beyond.

In the UK, **Oliver** has built a sustained relationship with the Bailies of Bennachie, a local community group, leading the Bennachie Landscapes project, now in its ninth year. The project focuses on the historical archaeology and archival history of Aberdeenshire's most iconic landform: the hill of Bennachie. As a community heritage project, it serves as a testing ground to develop and critically reflect on issues around co-production and interdisciplinarity. Funding from the AHRC and Heritage Lottery Fund has enabled engagement with the wider community through a series of public events on and off the hill. This has included formal relationships with Aberdeenshire School Groups, Artists, the Aberdeenshire Polish Community, the Garrioch Heritage Society as well as individual members of the public. The Northern Picts project and Comparative Kingship projects run by **Noble** also have an active community element that has led to a growing sense of place, has encouraged creative engagement with the past and helped deliver national strategic aims on encouraging greater engagement. The Northern Picts project has collaborated with the National Museum Scotland (NMS) on research which recovered the northernmost pre-Viking Age hacksilver hoard known in Europe and local and national exhibitions (the latter organised by NMS) have been seen by tens of thousands of people.

Our collaborations have entailed working with local and national government. **Crozier** and **Oxenham** work with Unrecovered War Casualties-Army (UWC-A), Australia, in Papua New Guinea and France, recovering soldiers from WW2 and WWI for reinternment in Commonwealth cemeteries. **Knecht** collaborates with the Palau Bureau of Arts and Culture, working closely in developing preservation and research of archaeological sites on the Palau archipelago. This has resulted in two major surveys undertaken by Aberdeen, National Parks Authority USA and Palauan teams of WWII sites on Peleliu, two survey reports, several publications and numerous meeting presentations. **Knecht** reviews BAC professional reports made annually to their funders, the U.S. National Park Service. We also work with city councils and museums; **Britton** and **Crozier** provide advice on sampling strategies and collections curation and have undertaken consultancy work for commercial companies (AOC Archaeology, Headland Archaeology). **Oxenham** has been involved in the process for eventual repatriation of Australian indigenous remains from UK host museums back to Australia.

iii Contribution to the Research Base

International standing: Our international standing is reflected in a number of honorary positions held by Aberdeen staff. **Oxenham** is an Honorary Research Fellow at the Jilin University International Research Center for Bioarchaeology, China. **Britton** is an Associate Research Scientist at the Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany (2010-present). **Crozier** is a Research Associate at the National Museum of the Philippines and Affiliate scholar at the Archaeological Studies Program – University of the Philippines (UP-ASP). **Flink** is an Honorary Visiting Researcher Liverpool John Moores. **Knecht** (2016-present) is Research Fellow at the Museum of the Aleutians, Unalaska, Alaska. We also maintain international connections through our honorary appointments which includes Professor Keith Dobney (Sydney), Professor Neil Price (Uppsala), Dr Véronique Forbes (Memorial); Professor T. Douglas Price (UW-Madison); Dr Karen Milek (Durham).

Prizes and Awards:

Our researchers have been nominated for, and won, a number of prizes and awards. **Britton** won a 'Phillip Leverhulme Prize' in Archaeology in 2019 and **Oxenham** received a Silver Commendation from Deputy Chief of Army (Australia) for his volunteer work in repatriation of WWI and WWII casualties. The Nunalleq Cultural Resource Centre was nominated in 2019 by the Senator Lisa Murkowski for the 2019 National Medal for Museum Service by the Institute of Museum and Library Services and in 2020 Hillerdal and colleagues won the Archaeological Institute of America Award for [Outstanding Work in Digital Archaeology](#) for the [educational website](#) delivered as part of the Nunalleq project. The Northern Picts/Comparative Kingship project has been nominated for research project of the year in the [Current Archaeology Awards](#) (results awaited).

Academic conferences and events: Our Unit has been involved in organizing a number of high impact conferences at Aberdeen and beyond including 'Society for East Asian Archaeology, 7th Worldwide Conference', Cambridge/Boston, USA, 2016 (**Wright**); 'XIV Nordic Theoretical Archaeology Group', Stockholm 2014 (**Niklasson**); and 'Polarized Pasts: Heritage and political polarization in Europe and the United States', Stanford Archaeology Center 2019 (**Niklasson**). Sessions at major conferences have included at the 'International Union for Quaternary Research', Dublin 2019 (**Britton**); 'European Association for Archaeologists', Glasgow 2015 (**Noble; Niklasson**), Vilnius 2016 (**Britton**), Maastricht 2017 (**Niklasson**); Bern 2019 (**Niklasson, Noble**); 'Society of American Archaeology Meetings', San Francisco 2015 (**Hillerdal**), Vancouver 2017 (**Wright**); 'XIV Nordic Theoretical Archaeology Group', Stockholm 2014 (**Niklasson**); '8th Worldwide Conference', Nanjing, China 2018 (**Wright**). **Noble** organised the AHRC funded 'Late Neolithic Britain and Ireland' symposium, University of Aberdeen, 2014, and an AHRC funded Network Grant 'Royal Residences' with three meetings and over 20 international participants.

Editorships: Colleagues also serve on a range of editorial boards. These include the *Asian Archaeology* (Springer) review board (**Wright**), and editorial board (**Oxenham**); *Archaeology of East Asia Series at British Archaeological Reports* editorial board (**Wright**); *Mediterranean Archaeology and Archaeometry* editorial board (**Britton**); *Anthropological Science* (Japan) associate editor (**Oxenham**); and *Science of Human History in Asia and the Pacific* (Springer) founding member and editorial board (**Oxenham**); 'Open Archaeology' editorial board (**Crozier**). Our palaeoecology colleagues in geography are also on the editorial boards for *Environmental Archaeology* (Mighall and Schofield).

Peer review: Researchers within the unit have reviewed for many of the leading journals in the field including: *American Anthropologist*; *American Antiquity*; *Antiquity*; *Anthropozoologica*; *Archaeology in Oceania*; *Archaeometry*; *Archaeological Research from Cambridge*; *Archaeological Research in Asia*; *Asian Perspectives*; *Big Data & Society*; *Current Anthropology*; *Environmental Archaeology*; *Frontiers*; *Germania*; *International Journal of Heritage Studies*; *International Journal of Osteoarchaeology*; *Journal of Anthropological Archaeology*; *Journal of Archaeological and Anthropological Sciences*; *Journal of Archaeological Research*; *Journal of Archaeological Science*; *Journal of Field Archaeology*; *Journal of Cultural Policy*; *Journal of Human Evolution*; *Journal of Social Archaeology*; *Nature*; *PLoS ONE*; *Political and Legal Anthropology*; *Primitive Tider*; *Proceedings of the National Academy of Sciences*; *Quaternary International*; *Quaternary Research*; *The Holocene*; *Vegetation History and Archaeobotany*.

Our researchers review grant applications for: AHRC, NERC, Leverhulme and Wellcome (UK); the NSF (USA); Austrian and Belgium Science Funds; Kazakhstan National Science Foundation; ICOMOS World Heritage Panel; Nordic Research Council and Riksbanken Sweden. **Britton** is a member of the AHRC's Peer Review College (2016-present). **Noble** is on the review panel for the Swedish Riksbankens Jubileumsfon and the Norwegian Research Council and has served as reviewer for the Irish and Romanian Research Councils. **Oxenham** is a reviewer for the British Academy's Knowledge Frontiers 2021 programme.

Internationalisation: Our researchers have a wide range of international appointments and responsibilities. **Oliver** is on the standing committee for the Contemporary and Historical Archaeology in Theory (CHAT) (2007 – present); and Vice Chair of the Aberdeen and Northeast Section of the Society of Antiquaries of Scotland (2015-present); **Knecht** is Vice-chair of the Peleliu War Historical Society (2004-present); Technical Advisor and Reviewer, Archaeology and Ethnography (2014-present), Palau Bureau of Arts and Culture, U.S. National Park Service; Vice-Chair, Qanirtuuq Heritage Inc. (2017-present), Alaska; Board Member, Yupiit Piciryarit Museum, Bethel, Alaska (2018-present); and co-director of the Nunalleq Culture and Archaeological Center, Quinhagak, Alaska (2017-present). **Crozier** is a Research Associate at the National Museum of the Philippines and Affiliate scholar at the Archaeological Studies Program – University of the Philippines (UP-ASP). **Oliver, Noble, Britton, Oxenham** and **Crozier** are Fellows of the Scottish Society of Antiquaries (Elected). **Oxenham** is a Fellow of the Australian Academy of the Humanities.

Keynotes and invited lectures: Colleagues are regularly invited to give lectures at international conferences and events. These include: **Oxenham:** 58 conference presentations since 2014, including 14 invited or keynote, at academic institutions/venues in Cambodia, Vietnam, the Philippines, Indonesia, Vanuatu, Taiwan, China, the UK, France, Croatia, Australia, New Zealand, and the US. **Britton:** More than 20 podium presentations since 2014, including talks at national and international congress, scientific meetings, and talks at diverse universities, museums, and societies. This includes 14 invited/keynote presentations, including at international archaeological and ecological conferences (e.g. INQUA, Dublin 2019; FAS, Vancouver 2018), international funded network meetings (Montreal; Brighton), and invited talks at UK and international universities and research institutes (e.g. Exeter, Liverpool, Durham, James Hutton Institute, Santander, Toulouse, Mainz, MPI-EVA) and societies (e.g. the Pictish Arts Society; Glasgow Archaeological Society). **Noble:** over 100 public engagement talks during the census period to local and national archaeological societies; over a dozen invited talks and has organized a AHRC funded symposium on the Late Neolithic of Britain and Ireland (2014). **Wright:** 12 invited or keynote speaking engagements since 2014 including conferences at Renmin University (Beijing) and Bonn University (Germany) as well as Oxford, Durham and Glasgow. Hebrew University (Israel), Denver Museum of Nature and Science (USA). **Niklasson:** invited contributions: three lectures, five talks, four expert panels, and six invited conference presentations, delivered in Sweden, UK, Italy, Switzerland, Turkey, USA, and China. Of specific note is the invited talk at Anamed, Koç University, in Istanbul October 2018, at the event 'Heritage Conversations', and the invited contribution to the *European Journal of Archaeology's* special session 'Populism, Identity Politics and the Archaeology of Europe' at the EAA in Bern, September 2019. **Crozier:** 10 conference presentations and five invited lectures since 2014, organised and ran the international conference "Human Osteoarchaeology in Southeast Asia and the Pacific", in 2016. **Knecht:** 15 invited and/or keynote lectures and 11 conference papers since 2014. Highlights are the 3rd Annual Sune Lindqvist Lecture at the University of Uppsala, the Burch Memorial Lecture at the Smithsonian Institution in Washington D.C. and a seminar at the Scott Polar Institute in Cambridge. **Flink:** seven conference presentations and four invited talks; co-organizing the 7th meeting of the ICAZ Archaeozoology and the BABAO Conference, Liverpool (2017). Invited lectures at Liverpool, Edinburgh and Stockholm; an invited keynote talk at Aykut Kence Evolution Conference, METU, Ankara, Turkey, 2018. **Hillerdal:** six conference presentations and organised three conference sessions (EAA, SAA), eight invited contributions including two invited conference presentations, one workshop, and five seminar series presentations, delivered in Sweden, USA, and the UK. **Oliver:** 11 conference papers, of which six invited speaking engagements since 2014, including conferences at Vancouver and Quebec City (Canada), Schwerin (Germany), Reykjavik (Iceland) as well as Sheffield, Glasgow, Kirkwall and Aberdeen.