



Attendee Manual

1 November 2021, 11am-1pm EST with keynote address by Professor Mary Lewis

2 November 2021, 11am-1pm EST with keynote address by Professor Sharon DeWitte

Optional Networking via Gather, 1-3pm EST on both days

**Organized by Creighton Avery and Megan Brickley
Department of Anthropology, McMaster University, Canada**

Supported by the Social Sciences and Humanities Research Council of Canada. Additional support provided by the Canadian Association of Physical Anthropology (CAPA-ACAP), Bioarchaeology International, and McMaster University's Faculty of Social Sciences.



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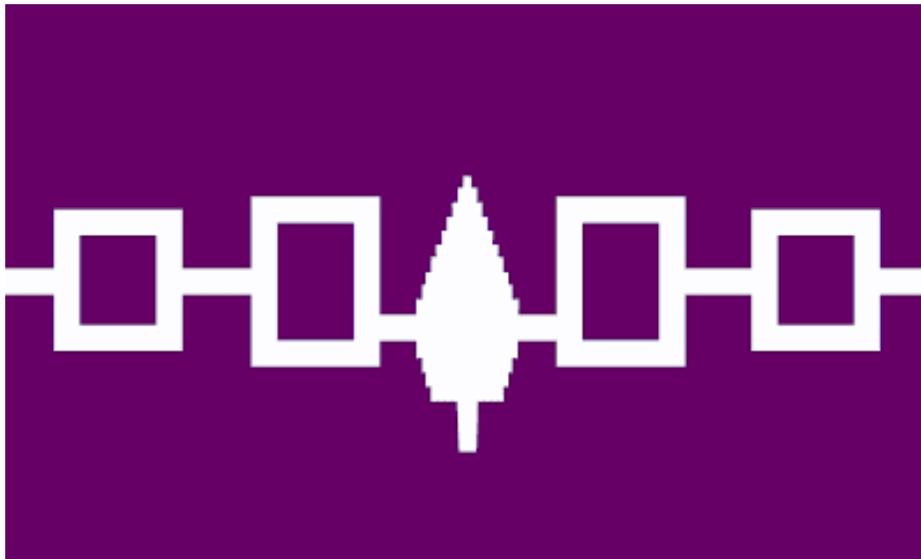
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Land Acknowledgement

McMaster University is situated on the traditional territories of the Haudenosaunee and Anishinaabe Peoples, on the lands protected under the Dish with One Spoon Wampum Agreement. In this agreement, the dish represents the land, and the spoon represents the people who are to take only what they need. We take this space to acknowledge the original stewards of this land and thank them for their ongoing efforts to protect Turtle Island.

We encourage you to learn about the lands on which you live and work by visiting whose.land or native-land.ca. You can also text 1-855-917-5263 with your location within Canada (e.g., Hamilton, Ontario), to identify the lands you occupy.



Flag of the Haudenosaunee and Six Nations, designed by Rick Hill, Harold Johnson, Tim Johnson.



Anishinaabe Thunderbird, by Grand Chief Ben Wawia

Description of the Workshop and Purpose of the Handout

Adolescence is a key phase of life, marked by drastic biological and social changes. Yet, despite adolescence being such a transformational period of life, we know relatively little about it in past populations; the study of adolescence in biological anthropology has only recently emerged.

Emerging Adolescence: A Virtual Workshop is the first virtual event to place developments related to adolescence in bioarchaeology at the centre of wider developments initiated by anthropologists working across the social sciences and allied areas. Featuring Canadian and international scholars, the workshop will explore the ways in which we can learn more about adolescents, and how the study of adolescence can enhance our study of the past more broadly over two days, via Zoom and informal discussion via Gather.

This handout includes details for the online event including tips for proper netiquette, schedule, as well as abstracts and biographies for the presenters featured in this workshop. It also provides definitions of key concepts and terms, as a primer for those that are less familiar with the study of adolescence in bioarchaeology.

Following the workshop, recordings, teaching materials, and a special issue with *Bioarchaeology International*, will be made available, to continue the conversation and dissemination of the work presented within the context of the workshop.

If you have any questions, please contact the organizing committee at EAVW2021@mcmaster.ca.

Netiquette Guide and Tips

We welcome your engagement in the workshop, provided that you conduct yourself with professionalism, treating all attendees and presenters with respect, courtesy and consideration.

To ensure a safe and enjoyable experience, the organizing committee is taking reasonable steps to limit and respond to issues of trolling, hacking, and abusive or inappropriate behaviour. Individuals who fail to treat others with respect will be removed from the session. The virtual sessions will also be recorded, and thus, a record of all behaviour will be kept.

Below are some tips from [McMaster University's Netiquette Guide](#):

1. Before you send a comment or post, ask if this is something you would keep to yourself if communicating in person. If it is, refrain from asking, or rephrase the question.
2. Avoid sarcasm or humour in chat, as it can often be misinterpreted.
3. If you need help understanding a message or comment, ask for clarification rather than assuming the worst.
4. Avoid writing in all capitals, which can seem aggressive, or in emojis or acronyms, which may have different meanings to different people.

A Note on Recordings

All Zoom sessions will be recorded. Following the workshop, videos of presentations will be made available for individuals to watch asynchronously and incorporated in teaching materials, which will be provided at a later date. Full recordings of the workshop will also be held privately to document inappropriate behaviour, if needed.

If you do not wish to be recorded, we recommend you keep your camera off, and share comments through private messages to the organizing committee. Alternatively, you may choose to not attend the event synchronously, and instead request the materials asynchronously following the event.

Schedule

Emerging scholars (recently graduated) are indicated with a “+” following their name, while students are identified with a “*”, and are presenting with their supervisors. All times are listed in Eastern Standard Time (EST).

Monday, November 1st, 2021: New Approaches to Past Discoveries

Zoom Meeting ID: 922 4913 3631

Passcode: Teenager

[Click here to join Zoom meeting](#)

Session Chair: Tina Moffat, Department of Anthropology, McMaster University, Canada

- | | |
|---------|--|
| 10:50am | Zoom Room opens |
| 11:00am | Welcome and Introductions Megan B. Brickley and L. Creighton Avery* |
| 11:10am | Mary Lewis. <i>Emerging Adolescence in Bioarchaeology: Current Status and Potential Developments.</i> |
| 11:40am | Break |
| 11:50am | Sarah-Louise Decrausaz ⁺ , Jay T. Stock, Jane E. Williams, Mary S. Fewtrell, Jonathan CK. Wells. <i>Which comes first? An investigation of pelvic vs. body breadth growth velocity in adolescent girls from the United Kingdom.</i> |
| 12:05pm | Jose Sanchez ⁺ , Rob Hoppa. <i>Is Adulthood Required? Examining the Accuracy of Pelvic Sex Assessment Throughout Pubertal Growth.</i> |
| 12:20pm | Jeffrey Coffin ⁺ , Alexis Dolphin, M Jackes, C Yakymchuk, T Perrin. <i>Mobility and Adolescence in Neolithic France, Roquemissou.</i> |

- 12:35pm April Nowell, Jennifer French. *Baseline Models for Reconstructions the Lived Lives of Adolescents in the Gravettian*
- 12:50pm Concluding comments/questions Megan B. Brickley.
- 1:00pm *Optional:* Networking opportunities available via Gather.
[Click here to join the Gather Space](#)
 The Passcode is: Puberty
- 3:00pm End of Day 1.

Tuesday, November 2nd, 2021: Lived Experiences of Adolescents

Zoom Meeting ID: 910 0233 6057

Passcode: Transition

[Click here to join Zoom meeting](#)

Session Chair: Andrea Waters-Rist, Department of Anthropology, Western University, Canada

- 10:50am Zoom Room opens
- 11:00am Welcome to Day Two. Megan B. Brickley and L. Creighton Avery*
- 11:10am L. Creighton Avery*, Megan B. Brickley, Luca Bondioli, Tracy Prowse *Becoming Adults: An investigation of dietary change in childhood, adolescence, and adulthood at Isola Sacra (Italy, 1st-4th centuries CE).*
- 11:25am Amy Scott, Sarah MacInnes, Nicole Hughes, Vaughan Grimes, Jess Munkittrick. *An Absent Adolescence? A Bioarchaeological Approach to Understanding the Teenaged Lived Experience in 18th Century Atlantic Canada.*
- 11:40am Andrea Waters-Rist. *Adolescent Life in the 18th and 19th century Netherlands.*
- 11:55am Madeleine Lamer*, Barbara Veselka, Menno LP Hoogland, Megan B Brickley. *Evaluating the Social and Cultural Implications of Adolescent Rickets in the Netherlands in the 19th Century.*
- 12:10pm Break
- 12:20pm Sharon DeWitte, Allison Ham. *Pubertal Timing as a Measure of Health and a Bridge Between Past and Present.*
- 12:50pm Closing comments/questions Megan B. Brickley.
- 1:00pm *Optional:* Networking opportunities available via Gather.
[Click here to join the Gather Space](#)
 The Passcode is: Puberty
- 3:00pm End of Day 2.

Key Terms and Concepts

Adolescence is a key phase of life, marked by drastic biological and social changes.

Biologically, adolescence is the time which individuals achieve their adult height and weight, develop secondary sexual characteristics, and become sexually fertile. Many of the changes during adolescence take place during puberty, a period of rapid growth, characterized by the development of secondary sexual characteristics and the pubertal growth spurt. This process is typically divided into five stages: pre-puberty, acceleration, peak height velocity (PHV), deceleration, and post-puberty. While the pattern of changes is well known, the timing and pace with which an individual progresses through these stages is dependent on a wide variety of factors including genetics, diet, disease, and social conditions.

Key terminology in biological aspects:

Puberty. Period of rapid growth, characterized by the development of secondary sexual characteristics and the pubertal growth spurt.

Pubertal Onset. The age at which pubertal changes first take place. An important milestone in the process of puberty.

Pubertal Tempo. The page at which individuals progress through the process of puberty. An important measure of puberty.

Menarche. The first occurrence of menstruation. Typically occurs one year after PHV.

Socially, adolescence it is recognized as the point at which children become adults, and often includes a change in social position and responsibilities such as the introduction to the workforce or independent living. However, as social age is culturally constructed, the exact definition and experiences will depend on the community, as well as individual identity variables such as sex, gender, and status.

Key terminology in social aspects:

Adolescence. A social age group, often conceptualized as a transitional period between childhood and adulthood. In western contexts, it is often perceived as a “rebellious” stage. However, definitions and experiences vary across space and time.

Adolescent(s). A person or persons within the social age group of “adolescence”.

Childhood. A social age group, often conceptualized as physically, mentally, and socially immature. In Western contexts, it is often perceived as a dependent stage. However, growing bioarchaeological research demonstrates that children often took on roles and responsibilities within their communities.

Child(ren). A person or persons within the social age group of “childhood”.

Non-Adult. Refers to biologically immature or undeveloped body. Individuals may also use sub-adult or juvenile.

Adult. May refer to a social age group (e.g., socially mature and independent individuals) or a biological age group (e.g., those whose growth and development are complete).

Abstracts and Biographies

Emerging scholars (recently graduated) are indicated with a “+” following their name, while students are identified with a “*”, and are presenting with their supervisors.

Emerging Adolescence in Bioarchaeology: Current Status and Potential Developments.

Mary Lewis¹

¹University of Reading (UK)

Adolescence is a complex and dynamic transitional period of life. It is a contextual and individually tailored experience dependant on the individual's social status, gender, location, culture and family circumstances. Puberty provides a critical window of opportunity for measuring and understanding health before and during adolescence, and its timing and tempo are influenced by both long-term development and immediate circumstances. The study of adolescent skeletal remains bridges the gap between child and adult bioarchaeology but until recently, detailed studies of adolescent skeletal remains have been neglected. This paper highlights the importance of this life stage in our understanding of evolutionary development and generational health in the past. We explore the development of adolescent research in bioarchaeology and use archaeological and historical studies to examine the patterns that are emerging about adolescent experiences in the past.

Mary Lewis is Professor of Bioarchaeology at the University of Reading, UK and a world-renowned expert on childhood bioarchaeology. She specialises in the diagnosis of diseases in children and adolescents, and amongst her publications are over 17 peer reviewed article, 12 edited chapters, and two books promoting the study of non-adult remains in bioarchaeology: The Bioarchaeology of Children (CUP 2007) and Paleopathology of Children (Academic Press 2018). Over the past five years, her work on methods enabling researchers to estimate stages of puberty in archaeological skeletal remains have established her as the leading expert on adolescence, opening the door to a more direct analysis of adolescent skeletal remains.

Which comes first? An investigation of pelvic vs. body breadth growth velocity in adolescent girls from the United Kingdom.

Sarah-Louise Decrausaz ^{+,1,2}, Jay T. Stock^{1, 3, 4}, Jane E. Williams⁵, Mary S. Fewtrell⁵, Jonathan CK. Wells⁵

¹Department of Archaeology, University of Cambridge (UK)

²Department of Anthropology, University of Victoria (Canada)

³Department of Anthropology, Western University (Canada)

⁴Department of Archaeology, Max Planck Centre for the Science of Human History (Germany)

⁵Childhood Nutrition Research Centre, Population, Policy, and Practice Research and Teaching Department, UCL. Great Ormond Street Institute of Child Health (UK)

The growth pattern of the female pelvis is unclear, making it difficult to quantify possible causes for compromised obstetric capacity. The pelvis may be affected by puberty as this growth stage is key for preparation for reproduction. Previous work shows that pelvic breadth growth in girls occurs at a slower rate than growth in height, and that peak growth velocity for pelvic breadth occurs approximately 1 year prior to onset of menses. This study examines growth patterns of pelvic breadth alongside body breadth around the onset of menses. Body composition data and pelvic dimensions were collected from dual energy x-ray absorptiometry (DEXA) scans from 286 girls and women living in London and southeast England today between the ages of 4 and 22 years. Outcome pelvic dimensions collected from DEXA scans were bi-iliac breadth, mediolateral inlet breadth and biacetabular breadth. Outcome body breadth dimensions collected from the same scans were shoulder breadth. Variables were converted to age-adjusted z-scores to enable accurate comparison between adults and growing children. Growth velocity charts for pelvic breadth and body breadth were created using the LMS method. Average age at menarche in sample was 12.6 years. Peak growth velocity (PV) for shoulder breadth occurred at 8.2 years. There was no clear PV for bi-iliac breadth growth velocity decreases between 10 and 18 years of age. PV for biacetabular breadth occurred at 11.9 years and PV for mediolateral inlet breadth occurred at 12.5 years. These results suggest that growth velocity differs between body breadth and pelvic breadth and that measures of pelvic canal breadth align more closely with age at menarche as a marker of skeletal growth prioritizing for reproduction.

Dr. Sarah-Louise Decrausaz is an emerging scholar, graduating from the University of Cambridge, UK (2019). She has taught courses on human evolution, the human skeleton, and maternal health, which included modules on biological and social health during adolescence. Dr. Decrausaz's research focuses on using modern data on pelvic growth and development to inform our understanding of past communities. Her presentation at this workshop highlights the ways in which the female body changes during the period of adolescence, and how biological anthropologists may use modern populations to inform our understanding past populations. In addition to her teaching and research, Dr. Decrausaz is a writer and presenter for "Humans in 5", a weekly web series profiling anthropological research, demonstrating new methods of research delivery and innovative approaches to training.

Is Adulthood Required? Examining the Accuracy of Pelvic Sex Assessment Throughout Pubertal Growth.

Jose Sanchez^{+,1} & Rob Hoppa¹

¹University of Manitoba, Canada

Reliable skeletal sex assessment in non-adult skeletons continues to be the most elusive problem in juvenile osteology. While the main focus of methodological exploration has centered on children, less attention has been given to adolescents. An oft-cited challenge to non-adult sex assessment is that full expression of skeletal dimorphism in areas such as the pelvis and skull occurs in adulthood once growth has finished. The aim of this study is to examine the relationship between sexual dimorphism in the pelvis and the stages of pubertal growth. A total of 98 adolescent individuals from the Hamann-Todd and Terry collections were used for pubertal stage assessment and to assess the accuracy of 18 morphological pelvic traits commonly used for skeletal sex assessment. This study suggests that the post-pubertal period is not necessarily required for the full expression of sexual dimorphism of all 18 morphological pelvic traits. Surpassing peak height velocity appears to be more critical given that substantial dimorphism (i.e. 80%+ accuracy) is observed in some traits and overall sex estimates by the deceleration stage. With the growing body of literature on adolescence and pubertal growth in bioarchaeology, a comprehensive and refined understanding of sexual dimorphism in adolescent skeletons can only strengthen interpretations on the nuanced differences of this important life stage between the sexes.

Dr. Jose Sanchez graduated from the University of Manitoba during the COVID-19 pandemic, under the supervision of Dr. Robert Hoppa. His doctoral research examines the timing at which sex differences in the human pelvis appear in males and females between the ages of 4 months and 20 years. He also co-taught a course entitled "Juvenile Osteology and Bioarchaeology" at Brandon University. As reliable sex-estimations in sub-adult remains is considered the "holy grail" within bioarchaeology, Sanchez's presentation covers a foundational topic, bringing in new ideas and possibilities for overcoming past limitations. This presentation will also help researchers refine reconstructions of the transition into adulthood to better consider nuanced differences between the sexes.

Mobility and Adolescence in Neolithic France, Roquemissou.

Jeffrey Coffin¹, Alexis Dolphin¹, M Jackes¹, C Yakymchuk², T Perrin³

¹ Department of Anthropology, University of Waterloo (Canada)

² Department of Earth and Environmental Sciences, University of Waterloo (Canada)

³ CNRS, Université Toulouse Jean-Jaurès (France)

This study uses Laser Ablation-Multicollector-Inductively Coupled Plasma-Mass Spectrometry (LA-MC-ICP-MS) to measure changing $87\text{Sr}/86\text{Sr}$ ratios across the growth bands of six third molars (M3s) belonging to individuals from a communal burial located at Roquemissou, in the Aveyron department of Southern France, and dated to the Late Neolithic. The Late Neolithic in this region of France is associated with an increased focus on agriculture and seasonally mobile animal herding (Herrscher et al. 2013). We employ incremental isotopic analyses of tooth enamel from individuals buried at Roquemissou in order to answer questions about the possible relationship between mobility and sedentism in relation to subsistence practices during this period. Third molars were chosen because they develop during late childhood and early adolescence, which recent funerary and isotopic evidence have identified as transitional phases

of life in the Late Neolithic (Le Roy et al. 2018; Rey et al. 2021), whereby individuals were likely beginning to take a much more active role in hunting, herding, and farming. This research explores temporal variation in $^{87}\text{Sr}/^{86}\text{Sr}$ ratios to document variability in mobility during these proposed transitional phases. Changing strontium ratios and the overall average ranges vary significantly among these six individuals. Some exhibit relatively little change over time, while others shift very gradually, suggesting that these people were not seasonally mobile, and when they did move across the landscape did so very slowly. These findings indicate variability in mobility during adolescence in the region surrounding the site of Roquemissou and serve as a reminder that transitional phases of life may have been experienced differently, and that homogenizing perspectives on adolescence during the Neolithic in France should be questioned.

Jeffrey Coffin is a recent Master of Arts graduate from the University of Waterloo's Public Issues in Anthropology program, and currently the Manager of the Ancient and Contemporary Environmental Bioindicators Laboratory (ACEBioLab) at the University of Waterloo. His research with Dr. Alexis Dolphin (Assistant Professor, Director of ACEBioLab - Department of Anthropology) focused on reconstructing the mobility of individuals buried in France during the Neolithic (approximately 3200 BC) using isotopic analysis. He examined changes in the ratio of $^{87}\text{Sr}/^{86}\text{Sr}$ across the growth bands of maxillary third molars to identify patterns of mobility during the years of adolescence. This research into the lifeways of individuals during adolescence adds to the growing body of research on adolescence as a transitional period of life in the French region during the Neolithic.

Baseline Models for Reconstructing the Lived Lives of Adolescents in the Gravettian

April Nowell¹, Jennifer French²

¹University of Victoria (Canada)

²University of Liverpool (UK)

While adolescence is a human universal, the widely-documented variation in the experience and role of adolescence in human societies means that no equivalent principle of uniformitarianism can be cited to create a baseline for social or cultural adolescence in the Upper Paleolithic (40,000-10,000 BP). The best recent analogues for the experience and social perception of adolescence in the European Upper Paleolithic, and for the roles and responsibilities of adolescents, are other non-industrial societies, particularly extant hunter-gatherer groups. We need to be careful when making such comparisons to avoid both replicating the present in the past and implying that these groups are anything other than present-day populations with their own unique histories and cultures. Nonetheless, even at the level of a superficial comparison, data from non-industrial societies are an automatic antidote to all-too-common assumptions that key stereotypes of Western adolescence (e.g., the “teenage rebel”) are universal. In this paper, we review key features of social adolescence among extant hunter-gatherer populations which also characterize Upper Paleolithic hunter-gatherers such as the small size of their foraging communities, their low population density, and (largely) mobile lifestyle. We then explore the influence of these variables on the experience and roles of adolescents. Finally, we combine this

data with bioarchaeological data to reconstruct the lived experience of at least some adolescents in the European Gravettian (ca. 28,000-21,000 BP).

Dr. April Nowell is a professor and chair of the Department of Anthropology at University of Victoria. As a paleolithic archaeologist, her research focuses on Neandertal lifeways, the archaeology of children, and the history of archaeological theory. Her research projects include examining children and communities of practice in the Upper Paleolithic, and social and cognitive development from childhood and adolescence in Neandertal children. In this presentation, Dr. Nowell pushes the boundaries of time, to consider far off populations, and how we can use multiple lines of evidence to better understand those who came before us.

Becoming Adults: An investigation of dietary change in childhood, adolescence, and adulthood at Isola Sacra (Italy, 1st-4th centuries CE)

L. Creighton Avery*¹, Megan B. Brickley¹, Luca Bondioli², Tracy Prowse¹

¹McMaster University (Canada)

²Bioarchaeology service, Museum of Civilizations (Italy)

Previous research at the Roman Imperial necropolis of Isola Sacra (Italy, 1-4th centuries CE) points to different diets for males and females, as well as between children and adults. However, to date, research has not been able to identify when this transition occurred, or when gendered diets, as seen in adults, first appeared within the Roman life course. Using dietary stable isotope analysis of incremental tooth dentine, and oblique sectioning protocols, we aim to better understand the transitions between a child and adult diet, as well as works to identify when sex-specific diets began at the necropolis of Isola Sacra (1-4th centuries CE, Italy). Spearman's correlation indicates a positive correlation between age and $\delta^{15}\text{N}$ isotope values, suggesting a gradual transition to an 'adult' diet, based on increased consumption of marine resources or higher trophic level foods ($r_s=0.541$, $p<.001$). The impact of physiological stress on $\delta^{15}\text{N}$ values is also considered within the context of puberty. Incorporating osteological sex estimations, the data suggest that males and females consumed different diets as early as 4.5 years of age, challenging literary sources and previous bioarchaeological research.

Creighton Avery is a doctoral candidate at McMaster University, investigating adolescence in the Roman Empire (1st-5th centuries CE), specifically as it relates to physical and social aging. Her research is supported by her doctoral advisors, Dr. Megan Brickley (Professor, CRC (Tied 1) Bioarchaeology of Human Disease) and Dr. Tracy Prowse (Associate Professor, Associate Dean Academic - Faculty of Social Science). Creighton developed and taught an undergraduate course on Childhood in the Past, which incorporated adolescents into class discussions and student research projects and was a guest lecturer for the Society of the Study of Childhood in the Past. Her presentation is an important contribution for bridging the social and physical changes seen in the skeleton, to consider the experiences of adolescence in a holistic manner.

An Absent Adolescence? A Bioarchaeological Approach to Understanding the Teenaged Lived Experience in 18th Century Atlantic Canada.

Amy Scott¹, Sarah MacInnes², Nicole Hughes¹, Vaughan Grimes³, Jess Munkittrick³

¹University of New Brunswick (Canada)

²Parks Canada, Fortress of Louisbourg National Historic Site (Canada)

³Memorial University (Canada)

For this study, we will focus on a small subsample of adolescent individuals (12-20 years) from the 18th century Fortress of Louisbourg in Cape Breton, NS looking specifically at patterns of stress, diet, and migration. Despite being physiologically immature, culturally these teenagers at Louisbourg were expected to participate in adult activities, namely military work as soldiers. The pressures of colonial survival and the desperate need to maintain the population of New France provided unique challenges to these individuals, demonstratively shaping their lived experiences.

*Dr. Amy Scott is a bioarchaeologist focused on the lived experience in 18th century Atlantic Canada. Her research specialties include childhood stress, fetal identity and personhood, patterns of non-adult growth and development, mortuary archaeology, and the study of ancient proteins to assess chemical and molecular biology of past peoples. Dr. Scott has published on the theoretical and methodological challenges of stress analysis in non-adult individuals and has published the edited volume, *The Anthropology of the Fetus: Biology, Culture, and Society*. This presentation will provide significant insight into the childhood lived experience at the Fortress of Louisbourg, contributing to the public dissemination of knowledge at this National Historic Site of Canada while also expanding bioarchaeological research in this region.*

Adolescent Life in the 18th and 19th century Netherlands.

Andrea Waters-Rist¹

¹Western University (Canada)

Dr. Waters-Rist will present historical information about adolescence in the post-Medieval period in the Netherlands, including societal norms about schooling and work inside and outside the home. Many adolescents from a rural 19th century cemetery called Middenbeemster have been identified using archival and municipal documents. Osteological and isotopic research on the individuals of known age, sex, and family are used to reconstruct detailed life course information. A focus is societal norms of marriage and reproduction in the older adolescent/young adult (~18 to 25 years) females with consideration of how pregnancy, birth, and infant feeding might cause changes in the skeleton.

Andrea Waters-Rist is an Associate Professor at Western University, Canada, and an Adjunct Research Professor at Leiden University, The Netherlands. Her research focus includes dietary analysis, growth and development, paleopathology, and activity-induced modifications. Dr. Waters-Rist's areas of interest include post-Medieval Dutch rural and urban populations, Neolithic to Iron Age Siberian hunter-gatherers and pastoralists, and pre-Columbian Nicaraguan

agriculturalists. This presentation will be unique insights into life course changes for individuals in post-Medieval Netherlands, incorporating bioarchaeological and archival datasets.

Evaluating the Social and Cultural Implications of Adolescent Rickets in the Netherlands in the 19th Century.

Madeleine Lamer*¹, Barbara Veselka², Menno LP Hoogland³, Megan B. Brickley¹,

¹McMaster University (Canada)

²Vrije Universiteit Brussel (Belgium)

³University of Leiden (Netherlands)

Vitamin D deficiency is typically the result of combined biological and cultural variables that limit an individual's exposure to sunlight. During growth spurts, such as the adolescent or pubertal growth spurt, high demand for vitamin D puts individuals at an increased risk for developing conditions such as rickets. While bioarchaeologists have investigated childhood rickets, this research is the first to thoroughly investigate rickets occurring during adolescence. Using macroscopic, radiographic, and MicroCT analysis of skeletal remains from the 18th to 19th century Dutch sites of Middenbeemster ($n=250$) and Hattem ($n=118$) we evaluate the paleopathological prevalence and appearance of rickets during the pubertal growth spurt. By identifying rickets, this research also provides a window to view the changing roles of individuals as they begin to occupy new spaces in their transition from children into adults, thus providing a novel way to investigate the lives of adolescents.

Madeleine Lamer is a former Master's student at McMaster University, where she developed methods for the identification of rickets in adolescents and investigating the social implications of adolescent rickets in two Dutch 19th century archaeological sites. With the support of her former advisor, Dr. Megan Brickley (Professor, CRC (Tier 1) Bioarchaeology of Human Disease), she is currently working on publishing aspects of this work. Madeleine has a long-standing interest in adolescence and previously co-organized and co-chaired a session at the 2019 American Association of Anthropology meeting focusing on the embodiment of adolescence and stress "Growing up in times of stress: factors influencing the embodiment of struggle in childhood". Madeleine's presentation provides novel means for studying the changing social roles of adolescents by examining pathological changes in the human skeleton.

Pubertal Timing as a Measure of Health and a Bridge Between Past and Present.

Sharon DeWitte¹, Allison Ham¹

¹University of South Carolina (USA)

Bioarchaeologists face major limitations when attempting to reconstruct health and well-being in the past, including heterogeneous frailty, selective mortality, and the generally low specificity and sensitivity of skeletal stress markers. There is a need to expand the toolkit of informative skeletal markers available to bioarchaeologists to improve our studies of these phenomena in

the past. Promising variables, to that end, are those that are indicative of pubertal timing. Menarche, for example, is a reliable indicator of standards of living and growth conditions. Because pubertal timing can be assessed skeletally, bioarchaeological analysis of puberty has the potential to put our research into greater overlap with that of human biologists and economists. That is, by studying something that is assessed routinely in living populations (which is not the case with many skeletal markers conventionally used by bioarchaeologists, e.g. periosteal new bone formation and cribra orbitalia), we can make gains in connecting the patterns we find in skeletal assemblages to those observed in historical data and among living people and engage in fruitful dialogue with scholars in other fields. Further, the use of menarcheal timing, in particular, inherently centers bodies capable of menstruating (often, arguably too simply, referred to as “females”) in studies of and conceptualizations of the past, thus avoiding engaging in cis-male-centered bioarchaeological research and bringing our work into better alignment with feminist approaches to the past. This paper describes the use of menarcheal timing to evaluate conditions in the past, in general, and provides case studies from the published literature.

Sharon DeWitte is a world renowned paleodemographer and paleoepidemiologist, analyzing infectious diseases in the past, particularly as it relates to how factors such as sex, gender, social status, health, developmental stress, nutritional status, and geographic origin affected risks of mortality from such diseases. For over 15 years, her research has primarily focused on trends in health and demography before, during, and after the 14th-century Black Death in England, producing some of the most cited work on these subjects. She is particularly interested in expanding the tools available to bioarchaeologists to examine health in the past in ways that put us in dialogue with human biologists studying living people, and to that end has recently collaborated on a study of pubertal timing in the context of medieval plague.

Special Issue of *Bioarchaeology International*

Following the workshop, authors are invited to share their research in a special issue of *Bioarchaeology International* to be co-guest edited by Creighton Avery, Mary Lewis and Megan Brickley.

Contributions are still invited for the special issue. If you are interested in contributing, please contact Creighton Avery (averylc@mcmaster.ca) to discuss this possibility. Papers for the journal special issue will be due **1 February 2022**.

Organizing Team



Creighton Avery
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PhD Candidate, McMaster University



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Funding Support

The Emerging Adolescence Virtual Workshop is supported, in part, by funding from the Social Sciences and Humanities Research Council. Additional support provided by the Canadian Association of Physical Anthropology (CAPA-ACAP), Bioarchaeology International, and McMaster University's Faculty of Social Sciences.

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