Ashley Ciúine Smith – Summary Curriculum Vitae

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utoronto.academia.edu/AshleySmith
https://rss.com/podcasts/boneclub/

Education

2014-Present PhD Anthropology (Candidacy Achieved 2016; Defense Fall 2025)
University of Toronto, Toronto, ON, Canada
Dissertation: *Examination of Histotaphonomic and Histochemical Methods in Establishing the Early Postmortem Interval*

2010-2012 MSc Forensic Anthropology
Boston University School of Medicine, Boston, MA
Thesis: *The Effect of Sharp-Force Thoracic Traum on the Rate and Pattern of Decomposition in New England*

2008-2010 BA Anthropology (English minor) [Cum Laude]
University of Memphis, Memphis, TN

Publications

Blatt, S., Isa, M, Michael, A., Flaherty, T., Smith, A.C., Unwin, S., and Howard S.,* Introducing the contextual observations in support of all gender expressions (COSAGE) for forensic anthropology. In Queering Biological Anthropology: uses of LGBTQIA+ knowledge and queer feminism in research, *American Journal of Biological Anthropology*. (Under Review).

Smith, A.C. Comment on: Meloro, R., Tallman, S. D., Steed C. G., Stowell, J. T., Delgado, T. A., Haug, J. D., Redgrave, A., Winburn, A. P. A Framework for Incorporating Diverse Gender Identities into Forensic Anthropology Casework and Theory: Recommendations for Inclusive Practices, *Current Anthropology* 2025 66(4) doi: 10.1086/736355

Tallman, S., Smith, A.C., Gruenthal-Rankin, A., and Adams, D. Fighting for Justice for the Dead – and the Living. *Sapiens* (Op-Ed/Viewpoint). 04 Mar 2025.

Adams, D., Bedard, J., Blatt, S., Faisal, E., Goliath, J., Gregory-Alcock. G., Gruethal-Rakin, A., Morales Lorenzo, P., Smith, A.C.[1], Tallman, S., Tegtmeyer-Hawke, R., Whitelaw, H.* Speaking Truth to Power: Towards a Forensic Anthropology of Advocacy and Activism. Humans 2024 4(1): 66-90. doi: 10.3390/humans4010005

Blatt, S. H., Smith, A. C., Rhoads, M. H.-D., & Miles, T. (*In Press*). Cripping, Queering, and Transforming Education in Biological Anthropology. In S. C. Agarwal, C. M. de La Cova, R. Gowland, S. E. Halcrow, & R. Schug (Eds.), *Equitable and Sustainable Global Futures: Bioarchaeology, Activism, and Social Justice*. New York: Springer.

Adams, D., Blatt, S., Flaherty, T., Haug, J., Isa, M., Michael, A. R., & Smith, A. C.*. Shifting the Forensic Anthropological Paradigm to Incorporate the Transgender and Gender Diverse Community. Humans 2023; 3(3): 142-165. doi: 10.3390/humans3030013

Smith, A.C.[1], Watamaniuk, L., and Roger, T.L. Use of Laser Scanning Confocal Microscopy in Bone. Journal of Forensic Sciences 2022; 67(1): 92-101. doi: 10.1111/1556-4029.14902

Smith, A.C.[1] and Boaks, A. Consistency of selected craniometric landmark locations and the resulting variation in measurements. Forensic Science International 2017; 280(1) 156-163. doi: 10.1016/j.forsciint.2017.10.002

Smith, A.C.[1] and Boaks, A. How "standardized" is standardized? A validation of postcranial measurement landmark locations. Journal of Forensic Sciences 2014: 59(6) 1457-1465. doi: 10.1111/1556-4029.12576

Smith, A.C.[1] The effect of sharp-force thoracic trauma on the rate and pattern of decomposition. Journal of Forensic Science 2014; 59(2): 319-26. doi: 10.1111/1556-4029.12338

*All authors listed as equal author; [1] Submitted as corresponding author

Works in Progress

Smith, A.C[1]., Delgado, T.A., Flaherty, T., Verostock, K., Gruenthal-Rankin, A., Stantis, C., Bouderdaben, F., Glavee., Blatt, S.H., Dwyer, I., Faisal, E.* Ethics in Data Collection, Curation, and Use in the Biological Anthropology AI [placeholder title] (Journal Article).

Smith, A.C.[1], Rogers, T.L. Cellular Degradation in Bone as a Tool to Investigate the Postmortem Interval. (Journal Article)

Smith, A.C.[1], Rogers, T.L Degradation of osteocalcin and osteopontin for use in postmortem interval estimation during the early postmortem period. (Journal Article)

Ferguson, C., Smith, A.C.[1], Rogers, T.L. Effects of Embalming in the Preservation of Osteopontin. (Journal Article)

Turner-Byfield, E., Smith, A.C. *Problems with the Biological Profile and Potential Options for Replacement.* (Journal Article)

*All authors listed as equal author

Presentations

2026 Oral Presentation: 78th Annual Meeting of the American Academy of Forensic Sciences [Submitted]
Preventing a Repeat of the Past: Ethical Considerations in Data Collection and Use in Age of Artificial Intelligence and Machine Learning

2025 Oral Presentation: 77th Annual Meeting of the American Academy of Forensic Sciences
Cellular Degradation and Migration in Bone as a Tool to Investigate the Postmortem Interval and the Post-Injury Timing.

2024 Poster Presentation: 2024 Anatomy Connected, American Association for Anatomy
Degradation of osteocalcin and osteopontin for use in postmortem interval estimation during the early postmortem period.

2023 Oral Presentation: Graduate Research Colloquium, University of Toronto – Mississauga
When Bone Lights Up: A Novel Way of Labeling Bone Proteins and Cells and Its Potential Uses

2023 Poster Presentation: 75th Annual Meeting American Academy of Forensic Sciences.
When Bone Lights Up: A Novel Way of Labeling Proteins and Cells and Its Potential Uses

2022 Poster Presentation: 91st Annual Meeting American Association of Biological Anthropologists (previously AAPA) (co-author: Billings, A)
Age Estimation with Bone Histomorphometry from the Human Ilium

2022 Symposium: 91st Annual Meeting American Association of Biological Anthropologists (co-host Schall, J.)
Advances and Challenges in the Identification of Sex and Gender in Human Osteological Cases

2022 Podium Presentation: 74th Annual Meeting of the American Academy of Forensic Science (co-authors: Dzubak, A.; Turner-Byfield, E.; Saly, A.; Maiers, J.)
Education and the Biological Profile: Survey Data on the Construction of the Biological Profile

2019 Poster Presentation: 88th Annual Meeting American Association of Physical Anthropologists
Use of Laser Scanning Confocal Microscopy in Detecting Bone Microstructure Using Basic Fuchsin and Toluidine Blue Stains

2018 Podium Presentation: 87th Annual Meeting American Association of Physical Anthropologists (co-author: Watamaniuk, L.)
Use of Laser Scanning Confocal Microscopy to Detect Diagenetic Changes in Bone

2018 Poster Presentation: Annual Meeting of the American Society for Bone and Mineral Research (co-author: Watamaniuk, L.*; Dion, N.; Ste-Marie, L.G.)
Comparison of Laser Scanning Confocal Microscopy & Light Microscopy in Forensic Histo-Osteology

2017 Podium Presentation: 45th Annual Meeting Canadian Association for Physical Anthropology (Symposium below)
Use of Laser Scanning Confocal Microscopy in Osteological Examinations
2017 Symposium: 45th Annual Meeting Canadian Association for Physical Anthropology (co-host Watamaniuk, L.)
Under the Microscope: Emerging Uses of Histology and Histochemistry in Biological Anthropology
2017 Poster Presentation: 45th Annual Meeting Canadian Association for Physical Anthropology (co authors: Eastham, L.; Fukuzawa, S.; Ball, C.; DeVries, M.; Ranlett, S.)
The Virtual Mystery Project: Teaching Physical Anthropology with online hybridized problem-based learning
2017 Podium Presentation: 21st Triannual Meeting of the International Association of Forensic Sciences (co-author: Watamaniuk, L*)
Reconsidering Special Stains in Forensic Histo-Anthropology
2017 Podium Presentation: Graduate Research Colloquium, University of Toronto – Mississauga
The Use of Laser Scanning Confocal Microscopy in Distinguishing Between Peri-Mortem Trauma and Postmortem Damage
2017 Podium Presentation: 69th Annual Meeting American Academy of Forensic Sciences
The Use of Laser Scanning Confocal Microscopy in Distinguishing Between Peri-Mortem Trauma and Postmortem Damage
2015 Poster Presentation: 67th Annual Meeting American Academy of Forensic Sciences, Young Forensic Scientist Forum
The Consistency of Type II Craniometric Landmark Locations In Practice and the Resulting Variation in Measurements.
2013 Poster Presentation: 82nd Annual Meeting of the American Association of Physical Anthropologists, Knoxville, TN
Secular Change in the Length and Breadth of the Bones of the Upper Limb

Grants and Awards

2023 Sigma Xi Grant In Aid of Research ($1,000USD)
Histotaphonomic and Histochemical Differentiation of Perimortem and Early Postmortem Damage in Bone and Its Use in Establishing the Early Postmortem Interval.
2021 University of Toronto, Department of Anthropology, Conference Travel Grant ($1,000CAD)
The Use of Laser Scanning Confocal Microscopy in Distinguishing Between Peri-Mortem Trauma and Postmortem Damage
2017 University of Toronto Teaching Assistant Training Program (TATP), Teaching Assistant of the Year: University-Wide Finalist
2017 University of Toronto, School of Graduate Studies, Conference Travel Grant ($1,000CAD)
The Use of Laser Scanning Confocal Microscopy in Distinguishing Between Peri-Mortem Trauma and Postmortem Damage
2015 University of Toronto, Department of Anthropology Pilot Research Grant ($1,000CAD)
2012 Forensic Sciences Foundation Student Affiliate Scholarship ($500USD)
The effects of sharp-force thoracic trauma on the rate and pattern of decomposition
2012 Boston University School of Medicine, Research Travel Grant ($700USD)
Secular Change in the Length and Breadth of the Bones of the Upper Limb

Teaching Experience

2024 Co-Instructor – Forensic Microscopy and Physical Evidence – University of Toronto, Mississauga, ON
2023 Instructor – Human Osteology – University of Toronto, Mississauga, ON
2023 Instructor – Forensic Microscopy and Physical Evidence – University of Toronto, Mississauga, ON
2022-2023 Mentor – FSC418 Forensic Internship (Comparison of Bone Histochemistry in Embalmed and Unembalmed Remains) – University of Toronto, Mississauga, ON
2022-2023 Teaching Assistant – Forensic Microscopy and Physical Evidence – University of Toronto, Mississauga, ON

2022	Teaching Assistant – Best Practices in Forensic Science – University of Toronto, Mississauga, ON
2021-2022	Teaching Assistant – Forensic Anthropology Field School – University of Toronto, Mississauga, ON
2021-2022	Teaching Assistant – Human Osteology – University of Toronto, Mississauga, ON
2021-2022	Mentor – FSC481 Forensic Internship (Comparison of Autofluorescence in Bone Over Time) University of Toronto, Mississauga, ON
2021	Instructor/Mentor – Independent Research (Comparison of Histological Age Estimation) University of Toronto, Mississauga, ON
2021	Teaching Assistant – Disaster Victim Identification/Missing Persons – University of Toronto, Mississauga, ON
2021-2023	Teaching Assistant – Forensic Anatomy – University of Toronto, Mississauga, ON
2020-2021	Teaching Assistant – Introduction to Anthropology – University of Toronto, Toronto, ON
2021	Teaching Assistant – The Real CSI – University of Toronto, Mississauga
2019	Co-Instructor – Forensic Anatomy – University of Toronto, Mississauga, ON
2018	Teaching Assistant – Criminology Research Methods – Lakehead University, Orillia, ON
2018-2023	Teaching Assistant – Forensic Pathology – University of Toronto, Mississauga, ON
2018	Teaching Assistant – Death Investigation – Lakehead University, Orillia, ON
2018	Teaching Assistant – Introduction to Criminalistics – Lakehead University, Orillia, ON
2017	Teaching Assistant – Introduction to Psychology – Lakehead University, Orillia, ON
2017-2019	Teaching Assistant – Introduction to Forensic Science – University of Toronto, Mississauga, ON
2017	Teaching Assistant – Criminal Profiling – Lakehead University, Orillia, ON
2017, 2020	Teaching Assistant – Food & Nutrition – University of Toronto, Mississauga, ON
2016	Teaching Assistant – Violence (Criminalistics) - Lakehead University, Orillia, ON
2016-2017	Teaching Assistant – Introduction to Criminalistics – Lakehead University, Orillia, ON
2016-2019	Teaching Assistant – Human Osteology/Osteological Theory & Methods – University of Toronto, Mississauga, ON
2016	Teaching Assistant – Internship in Forensic Science – University of Toronto, Mississauga, ON
2016-2022	Teaching Assistant – Forensic Anthropology Field School (Summer) – University of Toronto, Mississauga, ON
2016	Teaching Assistant – Advanced Forensic Anthropology – University of Toronto, Mississauga, ON
2015-2019	Teaching Assistant – Sex, Evolution, and Behavior – University of Toronto, Mississauga, ON
2014	Teaching Assistant – Introduction to Forensic Anthropology – University of Toronto, Mississauga, ON

Invited Lectures

2023	University of Toronto Mississauga – *Consideration of Transgender & Gender Diverse People and Bodies in Forensic Anthropology*
2022	University of Toronto Mississauga – *The Biological Profile, Forensic Anthropology, and Education*
2022	University of Toronto Mississauga – *Electrical and Thermal Deaths*
2021-23	University of Toronto Mississauga – *Decomposition and the Environment*
2021	University of Toronto Mississauga – *Lower Limb*
2021	University of Toronto Mississauga – *Report Writing in Forensic Anthropology*
2021	University of Toronto Mississauga – *Upper Limb*
2017	University of Toronto Mississauga – *Osteometrics*
2017	Loyola Catholic Secondary School – *Role of Forensic Anthropologists in Death Investigations*
2017	Sheridan College – *Daubert, Frye, and the Role of Law in Forensic Anthropological Evidence*
2016, 17	University of Toronto Mississauga – *Reuniting Families*
2017	University of Toronto Mississauga – *Use and Pitfalls of Osteological Evidence in NAGPRA Disputes*
2012	Office of the Chief Medical Examiner, Boston, MA – *Effects of Sharp Force Thoracic Trauma on Decomposition*

Field Experience

2022	Recovery of Scattered Human Remains – Parry Sound, ON
2022	Recovery from Human Remains from house fire – Perth, ON
2021	Recovery of Human Remains from collapsed house – Innisfil, ON

2017 Recovery of Human Remains (Agency Head) – Fort Erie, ON
2015 Recovery of Human Remains from Unsuppressed House Fire – Owen Sound, ON
2011 Recovery of Porcine Remains from Single-Burial and Multiple-Burial Sites
2011 Recovery of Porcine Remains from Primary & Secondary Multiple-Burial Sites
2010 Forensic Search for Skeletal Remains – OCME – Boston, MA
2010 Forensic Search for Human Remains – Woburn, MA

Laboratory Experience

2024 Osteological Analyst, Returning Ancestors Project, Office of the Chief Coroner for Ontario, Toronto, ON
2022-P Forensic Anthropologist, Please Bring Me Home, Toronto, ON
2022 Trauma Consultant, Consultant to Consultant of Ontario Forensic Pathology Service, Toronto, ON
2022 Osteological Analyst, complete assessment of 6 set of remains for accession into skeletal collection, University of Toronto, Mississauga, ON
2022 Osteological Analyst, assessment of 16 crania for potential repatriation, University of Toronto, Mississauga, ON
2022 Osteological Analyst, assessment of juvenile cranium, Ontario Forensic Pathology Service, Toronto, ON
2021 Osteological Analyst, biological profile and traumatic assessments, Ontario Forensic Pathology Service, Toronto, ON
2017 Lead Osteological Analyst, Forensic Zoology, Waterloo, ON
2015 Assistant, Reuniting Families – Baylor University, Waco, TX
2013 Volunteer Forensic Training, Regional Forensic Center, Knoxville, TN
2012 Volunteer Forensic Training, Regional Forensic Center, Knoxville, TN
2012 Student Rotation with Forensic Pathologist
2012 Internship at the Regional Forensic Center, Knoxville, TN
2012 Anatomical Dissections of Human Remains, Regional Forensic Center – Knoxville, TN
2011-12 Processed Sub-Adult Skeletal Remains for Boston University Collection

Professionalism

2025 Abstract Review Committee, 78th Annual Scientific Meeting of the American Academy of Forensic Sciences
2024 Abstract Review Committee, 77th Annual Scientific Meeting of the American Academy of Forensic Sciences
2024-P Member, Ad Hoc Committee on Membership Recruitment, Retention, and Promotion, AAFS Anthropology Section
2023 Coordinator Author, *Speaking Truth to Power: Towards a Forensic Anthropology of Advocacy and Activism*
2023 Chair, Membership Ad Hoc Committee, Anthropology Section, American Academy of Forensic Sciences
2023 Abstract Review Committee, 76th Annual Scientific Meeting of the American Academy of Forensic Sciences.
2023-P Member, Diversity Equity and Inclusion Committee, Canadian Association of Biological Anthropology
2023-P Member, Diversity Outreach Committee, American Academy of Forensic Sciences
2023 Session Moderator, 75th Annual Scientific Meeting of the American Academy of Forensic Sciences
2022 Abstract Review Committee, 75th Annual Scientific Meeting of the American Academy of Forensic Sciences.
2022 Graduate Awards Committee, University of Toronto Mississauga
2022 Fellow, American Academy of Forensic Science
2022 Reviewer Current Forensic Science
2022 Session Moderator, 74th Annual Scientific Meeting, American Academy of Forensic Sciences
2021-24 Member, Ad Hoc Committee on Awards, AAFS Anthropology Section
2021-23 Member, Ad Hoc Committee on Membership Requirements, Recruitment, and Retention, AAFS Anthropology Section
2021 Abstract Review Committee, 74th Annual Scientific Meeting, American Academy of Forensic Sciences
2021-23 Member, Equity Funds Sub-Committee, Canadian Union of Public Employees Local #3902
2021 Member, American Anthropological Association
2017-18 Supervisor, Histology and Histochemistry graduate work study
2017 Reviewer American Journal of Physical Anthropology
2017 Session Moderator, Annual Forensic Science Day, University of Toronto – Mississauga
2017 Session Moderator, 69th Annual Scientific Meeting of the American Academy of Forensic Sciences

2016 Reviewer International Journal of Osteoarchaeology
2016 Member, Canadian Association for Biological Anthropology

Volunteerism & Outreach

2023-P Co-Host, Organizer, Producer, Editor, *The Bone Club* podcast (https://media.rss.com/boneclub/feed.xml)
2023 Judge, Ontario Junior Ethics Bowl
2023 Judge, Ontario Ethics Bowl
2016 Section Keynote Address, Ms. Infinity Ontario Conference, University of Guelph, Guelph, ON
2014-23 Forensic Outreach, University of Toronto, Mississauga, ON
2014 Volunteer Teaching Assistant, Forensic Anthropology Field School, University of Toronto, Mississauga, ON

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https://utoronto.academia.edu/AshleySmith
https://www.researchgate.net/profile/Ashley-Smith-88
https://rss.com/podcasts/boneclub/

Education

2014-Pres. PhD Anthropology (Candidacy Achieved 2016; Defense Fall 2025)
University of Toronto, Toronto, ON
Dissertation: *Examination of Histotaphonomic and Histochemical Methods in Establishing the Early Postmortem Interval*

2010-2012 MSc Forensic Anthropology
Boston University School of Medicine, Boston, MA
Thesis: *The Effect of Sharp-Force Thoracic Trauma on the Rate and Pattern of Decomposition in New England*

2008-2010 BA Anthropology (English minor) [Cum Laude]
University of Memphis, Memphis, TN

Publications

Blatt, S., Isa, M, Michael, A., Flaherty, T.., Smith, A.C., Unwin, S., and Howard S.,* Introducing the contextual observations in support of all gender expressions (COSAGE) for forensic anthropology. In Queering Biological Anthropology: uses of LGBTQIA+ knowledge and queer feminism in research, *American Journal of Biological Anthropology*. (Under Review).

Smith, A.C. Comment on: Meloro, R., Tallman, S. D., Steed C. G., Stowell, J. T., Delgado, T. A., Haug, J. D., Redgrave, A., Winburn, A. P. A Framework for Incorporating Diverse Gender Identities into Forensic Anthropology Casework and Theory: Recommendations for Inclusive Practices, *Current Anthropology* 2025 66(4) doi: 10.1086/736355

Tallman, S., Smith, A.C., Gruenthal-Rankin, A., and Adams, D. Fighting for Justice for the Dead – and the Living. *Sapiens* (Op-Ed/Viewpoint). 04 Mar 2025.

Adams, D., Bedard, J., Blatt, S., Faisal, E., Goliath, J., Gregory-Alcock. G., Gruethal-Rakin, A., Morales Lorenzo, P., Smith, A.C.[1], Tallman, S., Tegtmeyer-Hawke, R., Whitelaw, H.* Speaking Truth to Power: Towards a Forensic Anthropology of Advocacy and Activism. Humans 2024 4(1): 66-90. doi: 10.3390/humans4010005

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Adams, D., Blatt, S., Flaherty, T., Haug, J., Isa, M., Michael, A. R., & Smith, A. C.*. Shifting the Forensic Anthropological Paradigm to Incorporate the Transgender and Gender Diverse Community. Humans 2023; 3(3): 142-165. doi: 10.3390/humans3030013

Smith, A.C.[1], Watamaniuk, L., and Roger, T.L. Use of Laser Scanning Confocal Microscopy in Bone. Journal of Forensic Sciences 2021; 67(1): 92-101. doi: 10.1111/1556-4029.14902

Smith, A.C.[1] and Boaks, A. Consistency of selected craniometric landmark locations and the resulting variation in measurements. Forensic Science International 2017; 280(1) 156-163. doi: 10.1016/j.forsciint.2017.10.002

Smith, A.C.[1] and Boaks, A. How "standardized" is standardized? A validation of postcranial landmark locations. Journal of Forensic Sciences 2014; 59(6): 1457-1465. doi: 10.1111/1556-4029.12576

Smith, A.C.[1] The effects of sharp-force thoracic trauma on the rate and pattern of decomposition. Journal of Forensic Science 2014; 59(2): 319-26. doi: 10.1111/1556-4029.12338

*All authors listed as equal author
[1] Submitted as corresponding author

Works in Progress

Smith, A.C[1]., Delgado, T.A., Flaherty, T., Verostock, K., Gruenthal-Rankin, A., Stantis, C., Bouderdaben, F., Glavee., Blatt, S.H., Dwyer, I., Faisal, E.* Ethics in Data Collection, Curation, and Use in the Biological Anthropology AI [placeholder title] (Journal Article).

Smith, A.C.[1], Rogers, T.L. Cellular Degradation in Bone as a Tool to Investigate the Postmortem Interval. (Journal Article)

Smith, A.C.[1], Rogers, T.L Degradation of osteocalcin and osteopontin for use in postmortem interval estimation during the early postmortem period. (Journal Article)

Ferguson, C., Smith, A.C.[1], Rogers, T.L. Effects of Embalming in the Preservation of Osteopontin. (Journal Article)

Turner-Byfield, E., Smith, A.C. *Problems with the Biological Profile and Potential Options for Replacement.* (Journal Article)

*All authors listed as equal author

Presentations

2026 Oral Presentation: 78th Annual Meeting of the American Academy of Forensic Sciences [Submitted]
Preventing a Repeat of the Past: Ethical Considerations in Data Collection and Use in Age of Artificial Intelligence and Machine Learning

2025 Oral Presentations: 77th Annual Meeting of the American Academy of Forensic Sciences
Cellular Degradation and Migration in Bone as a Tool to Investigate the Postmortem Interval and the Post-Injury Timing.

2024 Poster Presentation: 2024 Anatomy Connected, American Association for Anatomy
Degradation of osteocalcin and osteopontin for use in postmortem interval estimation during the early postmortem period.

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When Bone Lights Up: A Novel Way of Labeling Bone Proteins and Cells and Its Potential Uses

2023 Poster Presentation: 75th Annual Meeting American Academy of Forensic Sciences.
When Bone Lights Up: A Novel Way of Labeling Proteins and Cells and Its Potential Uses

2022 Poster Presentation: 91st Annual Meeting American Association of Biological Anthropologists (previously AAPA) (co-author: Billings, A)
Age Estimation with Bone Histomorphometry from the Human Ilium

2022 Symposium: 91st Annual Meeting American Association of Biological Anthropologists (co-host Schall, J.)
Advances and Challenges in the Identification of Sex and Gender in Human Osteological Cases

2022 Podium Presentation: 74th Annual Meeting of the American Academy of Forensic Science (co-authors: Dzubak, A.; Turner-Byfield, E.; Saly, A.; Maiers, J.)
Education and the Biological Profile: Survey Data on the Construction of the Biological Profile

2019 Poster Presentation: 88th Annual Meeting American Association of Physical Anthropologists
Use of Laser Scanning Confocal Microscopy in Detecting Bone Microstructure Using Basic Fuchsin and Toluidine Blue Stains

2018 Podium Presentation: 87th Annual Meeting American Association of Physical Anthropologists (co-author: Watamaniuk, L.)
Use of Laser Scanning Confocal Microscopy to Detect Diagenetic Changes in Bone

2018 Poster Presentation: Annual Meeting of the American Society for Bone and Mineral Research (co-author: Watamaniuk, L.*; Dion, N.; Ste-Marie, L.G.)
Comparison of Laser Scanning Confocal Microscopy & Light Microscopy in Forensic Histo-Osteology

2017 Podium Presentation: 45th Annual Meeting Canadian Association for Physical Anthropology (Symposium below)
Use of Laser Scanning Confocal Microscopy in Osteological Examinations

2017 Symposium: 45th Annual Meeting Canadian Association for Physical Anthropology (co-host Watamaniuk, L.)
Under the Microscope: Emerging Uses of Histology and Histochemistry in Biological Anthropology

2017 Poster Presentation: 45th Annual Meeting Canadian Association for Physical Anthropology (co authors: Eastham, L.; Fukuzawa, S.; Ball, C.; DeVries, M.; Ranlett, S.)
The Virtual Mystery Project: Teaching Physical Anthropology with online hybridized problem-based learning

2017 Podium Presentation: 21st Triannual Meeting of the International Association of Forensic Sciences (co-author: Watamaniuk, L*)
Reconsidering Special Stains in Forensic Histo-Anthropology

2017 Podium Presentation: Graduate Research Colloquium, University of Toronto – Mississauga
The Use of Laser Scanning Confocal Microscopy in Distinguishing Between Peri-Mortem Trauma and Postmortem Damage

2017 Podium Presentation: 69th Annual Meeting American Academy of Forensic Sciences
The Use of Laser Scanning Confocal Microscopy in Distinguishing Between Peri-Mortem Trauma and Postmortem Damage

2015 Poster Presentation: 67th Annual Meeting American Academy of Forensic Sciences, Young Forensic Scientist Forum
The Consistency of Type II Craniometric Landmark Locations In Practice and the Resulting Variation in Measurements.

2013 Poster Presentation: 82nd Annual Meeting of the American Association of Physical Anthropologists, Knoxville, TN
Secular Change in the Length and Breadth of the Bones of the Upper Limb

Grants and Awards

2023 Sigma Xi Grant In Aid of Research ($1,000USD)
Histotaphonomic and Histochemical Differentiation of Perimortem and Early Postmortem Damage in Bone and Its Use in Establishing the Early Postmortem Interval.

2021 University of Toronto, Department of Anthropology, Conference Travel Grant ($1,000CAD)
The Use of Laser Scanning Confocal Microscopy in Distinguishing Between Peri-Mortem Trauma and Postmortem Damage

2017 University of Toronto Teaching Assistant Training Program, Teaching Assistant of the Year: University-Wide Finalist

2017 University of Toronto, School of Graduate Studies, Conference Travel Grant ($1,000CAD)
The Use of Laser Scanning Confocal Microscopy in Distinguishing Between Peri-Mortem Trauma and Postmortem Damage

2015 University of Toronto, Department of Anthropology Pilot Research Grant ($1,000CAD)

2012 Forensic Sciences Foundation Student Affiliate Scholarship ($500USD)
The effects of sharp-force thoracic trauma on the rate and pattern of decomposition

2012 Boston University School of Medicine, Research Travel Grant ($700USD)
Secular Change in the Length and Breadth of the Bones of the Upper Limb

Teaching Experience

2024 Co-Instructor – University of Toronto, Mississauga, ON
Hired to serve as the co-instructor for the Winter 2024 iteration of the *Forensic Microscopy and Physical Evidence* course where my responsibilities will include the course and classroom management, organizing the teaching assistants, and classroom and instrument instruction specifically in the areas of stereo and polarized-transmission light microscopy, confocal microscopy, and scanning electron microscopy.

2023 Instructor – University of Toronto, Mississauga, ON

Engaged as the course instructor for the Fall 2023 iteration of *Human Osteology* where my duties included course and classroom management, organizing the teaching assistants, test preparation, and classroom instruction on both the theoretical matters (e.g. bone biology, growth development and embryology, population demographics such as osteological sex assessment, metrics, and others), as well as the practical demonstration of the human skeleton from the cranium to the phalanges, including discussion of the major vessels, nerves, and muscle attachments that shape the various features.

2023 Instructor – University of Toronto, Mississauga, ON

Engaged as the sole course instructor for the Fall 2023 iteration of the *Forensic Microscopy and Physical Evidence* course where my duties included course and classroom management, organization and training of new teaching assistants, test preparation, and classroom and practical instruction in the areas of stereo and polarized light microscopy, confocal microscopy, and scanning electron microscopy.

2022–2023 Mentor – University of Toronto, Mississauga, ON

Served as a mentor to an undergraduate Forensic Science Internship student studying if the process of whole-body embalming effects bone histochemistry (specifically osteopontin preservation). The student is calculating differences in presence of osteopontin in two sample groups using laser-scanning confocal microscopy. My duties include guiding and mentoring the student as they conduct their research including in areas as project design, execution, and presentation, as well as training the student in all of the aspects of microscopy from sample collection, fixation, embedding, sectioning, and imaging.

2022-2023 Teaching Assistant – University of Toronto, Mississauga, ON

Engaged as a teaching assistant for the *Forensic Microscopy and Physical Evidence* course where my duties included assisting in devising the confocal microscopy lab as well as teaching students on the practical aspects of microscopy including the use of reflected light stereomicroscopy, polarized light microscopy, and confocal microscopy among others. Duties also included the marking of laboratories and projects derived from the students.

2022 Teaching Assistant – University of Toronto, Mississauga, ON

Hired as a teaching assistant for the *Best Practices in Forensic Science* course where my duties include marking of selected assignments, as well meeting and guiding students on an individual basis. In addition, my duties include the development and delivery of a lecture on health and safety in forensic anthropology, both in the field and in the lab.

2021, 2022 Teaching Assistant – University of Toronto, Mississauga, ON

Employed as a teaching assistant for the *Forensic Anthropology Field School* fall portion of the course where my duties include the instruction of students in the various laboratory aspects generated from field work including proper photography, the collection of evidence, and the generation of maps and reports. My duties also included the marking of materials and working with students on a more group and individual level.

2021–2022 Mentor – University of Toronto, Mississauga, ON

Engaged as a mentor to an undergraduate Forensic Science Internship student where their topic is examining the changes in autofluorescence in bone over a two-week post-mortem timeframe. The student will be calculating differences in fluorescence intensity from images generated by a laser-scanning confocal microscope. My duties include guiding and mentoring the student as they conduct their research including in areas as project design, execution, and presentation.

2021 Course Instructor/Mentor – University of Toronto, Mississauga, ON

Engaged as a course instructor and mentor for an undergraduate student in an Independent Research course where their topic is on Comparison of Histological Age Estimation Techniques. The student will be examining various histological age estimation techniques of the skeleton and comparing their efficacy with regards to the use of iliac samples. My duties included the overall development of the course, the collection and assignment of readings to the student, meeting with the student once a week to discuss said readings, marking papers and assignments, guiding the student in the development of ethics and research proposals/protocols, as well as the development and marking of a final research report, and assisting in the physical experimentation of the project.

2021 Teaching Assistant – University of Toronto, Mississauga, ON

Hired as a teaching assistant for the *Disaster Victims Identification and Missing Persons* course where my duties included answering student questions and concerns both during and post lecture regarding course/lecture content as well as marking the various course assignments.

2021–2023 Teaching Assistant – University of Toronto, Mississauga, ON

Engaged as a teaching assistant for the summer semester of *Forensic Anatomy* where my duties included answering student questions both during and outside of lecture on course content, marking of exams and assignments, and presentation of selected lectures.

2020–2021 Teaching Assistant – Introduction to Anthropology – University of Toronto, Toronto, ON

Engaged as a teaching assistant for the year-long *Introduction to Anthropology* course where my duties included tutorial instruction in socio-cultural, evolutionary, and archaeology, and the marking of essays and assignments.

2020 Teaching Assistant – University of Toronto, Mississauga

Hired as a marking teaching assistant for *The Real CSI* where my duties included grading student essays and assignments.

2019 Co-Instructor – University of Toronto, Mississauga, ON

Engaged as a course instructor for *Forensic Anatomy* where my duties included course development, lecture development and delivery, developing examinations, and marking students' assignments and exams.

2018 Teaching Assistant – Lakehead University, Orillia, ON

Engaged as a teaching assistant for the *Criminalistics Research Methods* course where my primary responsibilities included marking examinations and student communications.

2018–2023 Teaching Assistant – University of Toronto, Mississauga, ON

Hired as a teaching assistant with the Forensic Science Program to teach *Forensic Pathology* where my responsibilities include assisting students with assignments, marking assignments, student communication, exam invigilation, and assisting the professor is course development.

2018 Teaching Assistant – Lakehead University, Orillia, ON

Hired as a marker grader for the Winter term 2018 Death Investigation course where my responsibilities included the grading of the term assignment as well as student communication.

2018 Teaching Assistant – Lakehead University, Orillia, ON

Hired as a teaching assistant for the Winter 2018 *Introduction to Criminalistics* course. Responsibilities included marking of examinations and term assignments, as well as student communication.

2017 Teaching Assistant – Lakehead University, Orillia, ON

Employed as a marker/grader for the *Introduction to Psychology* course where my primary responsibilities were the grading of the final examinations which included a variety of question types including short essays.

2017–2019 Teaching Assistant – University of Toronto, Mississauga, ON

Served as a tutorial teaching assistant for the *Introduction to Forensic Sciences* course with the Forensic Science Program where my duties included developing and delivering presentation regarding specific areas of forensic science including relating to ethics and the players in the courtroom. Duties also including the invigilation of examinations and the marking of assignments.

2017, 2020 Teaching Assistant – University of Toronto, Mississauga, ON

Engaged as a teaching assistant for the *Food & Nutrition* course where duties included evaluating and grading students' essays regarding the biocultural and nutritional context surround two dishes of choice.

2016-2017 Teaching Assistant – Lakehead University, Orillia, ON

Engaged to assist with the *Introduction to Criminalistics* course, both Autumn and Winter courses, as well as the *Violence* (Autumn 2016) and *Criminal Profiling* (Winter 2017) courses, where my duties including marking students' essays and assignments and communicating with students.

2016–2023 Teaching Assistant – University of Toronto, Mississauga, ON

Employed as a teaching assistant for the *Human Osteology/Osteological Theory and Methods* course where duties include the instruction of the anatomy of the human skeleton, supervising examinations and marking student laboratories and assignments. Laboratory instruction also includes introducing students to the anatomy used in methodologies to determine age, sex, stature, and body mass of individuals.

2016–2017 Teaching Assistant – University of Toronto, Mississauga, ON

Employed as the primary teaching assistant for the *Internship in Forensic Sciences* course with the Forensic Science Program. Duties include assisting students with practical aspects of conducting scientific research such as the development of a protocol and research proposal, submission of ethics reports, and the dissemination of their results through presentation and manuscript format.

2016–2023 Teaching Assistant – University of Toronto, Mississauga, ON

Served as a teaching assistant for the *Forensic Anthropology Field School* where my duties included instructing students on the practical aspects of a search, excavation, and recovery of remains. Such instruction included how to plan for and execute search plans, proper recovery and documentation of evidence, and proper crime scene photography and documentation. Additionally, instructed students in the proper set- up and use of a Nikon DTS-522, and Sokkia total stations. Further was engaged in 2018 as a teaching assistant in the Fall portion of the course where my duties included student communication, marking of assignments and final project, and assisting students with the practical elements of search and recovery.

2016 Teaching Assistant – University of Toronto, Mississauga, ON

Served as a teaching assistant for the *Advanced Forensic Anthropology* course where my duties involved setting up laboratories, grading laboratory reports, quizzes, and a mock trial, and assisted students in understanding methodologies and approaches required for a mock case as well as for individual laboratories.

2015–2019 Teaching Assistant – University of Toronto, Mississauga, ON

Served as a teaching assistant for the *Sex, Evolution, & Behaviour*, course where my responsibilities include grading written assignments and assisting undergraduate students in the writing of major academic papers. In 2016 – 2019 my duties included the instruction and guiding of fellow teaching assistants.

2014 Teaching Assistant – University of Toronto, Mississauga, ON

Served as head teaching assistant for the *Introduction to Forensic Anthropology* course where my responsibilities included instructing three practicals, marking various assignments including the major paper, and assisting and mentoring students through the course.

2013-2017 Private Tutor – Memphis, TN

Served as a private tutor for various students with subjects ranging from literary analysis to proof reading of technical papers and reports. Primary subject taught was anatomy & physiology for an international graduate student with an emphasis on the viscera, musculoskeletal, and neural networks of the head, neck, and thorax. Additional focus was placed on the neural anatomy and pathways required for speech.

Invited Lectures

2023 University of Toronto Mississauga – *Consideration of Transgender & Gender Diverse People and Bodies in Forensic Anthropology*
2022 University of Toronto Mississauga – *The Biological Profile, Forensic Anthropology, and Education*
2022 University of Toronto Mississauga – *Electrical and Thermal Deaths*
2021-23 University of Toronto Mississauga – *Decomposition and the Environment*
2021 University of Toronto Mississauga – *Lower Limb*
2021 University of Toronto Mississauga – *Report Writing in Forensic Anthropology*
2021 University of Toronto Mississauga – *Upper Limb*
2017 University of Toronto Mississauga – *Osteometrics*
2017 Loyola Catholic Secondary School – *Role of Forensic Anthropologists in Death Investigations*
2017 Sheridan College – *Daubert, Frye, and the Role of Law in Forensic Anthropological Evidence*
2016, 17 University of Toronto Mississauga – *Reuniting Families*
2017 University of Toronto Mississauga – *Use and Pitfalls of Osteological Evidence in NAGPRA Disputes*
2012 Office of the Chief Medical Examiner, Boston, MA – *Effects of Sharp Force Thoracic Trauma on Decomposition*

Research Experience

2016-Pres. Histotaphonomic & Histochemical Differentiation of Perimortem Injury and Early Postmortem Damage in Human Bone (Doctoral Dissertation)

One of the more important aspects of modern forensic anthropological analysis is the differentiation between injuries inflicted at the time of death from damaged accrued after death. However, this is normally conducted using gross visualization which is dependent on the state of remains either being "fresh" with soft tissue and moisture present and "dry" where the moisture content has started to leach away and the soft tissue missing. Using laser scanning confocal microscopy, this project aims to use human bone collected as a part of pathological harvesting and bone collected from cadavers by testing for osteoclast depletion as well as osteocalcin and osteopontin degradation. The elements will be sectioned according to time collected with 12 being used as the "perimortem" sample, 10-12 being used as the immediate "postmortem". The postmortem samples are divided into 3 temporal groups with 1/3 of the individual sample being fixed immediately upon collection, and the remaining 2/3 sectioned and fixed at 7-days, and 14-days postmortem. Samples will be sectioned to 10 μm, then labeled with MitoTracker and AlexaFluor488 to study osteoclast presence, or differentially labelled with osteopontin and osteocalcin antibodies co-labeled with AlexaFluor 555. Images are analyzed for target presence and location with FIJI/ImageJ.

2022-2023 Effect of Embalming on Osteopontin Degradation

While conducting my doctoral dissertation, a common issue kept arising regarding the non-use of embalmed remains for histo-osteological research. While mentoring an undergraduate student, this project examined the effects of embalming on osteopontin degradation using an unembalmed "perimortem" sample group derived from bone biopsies and a group derived from anatomical cadavers embalmed six-month previous. Following the same method as the doctoral dissertation, the results of this study found that there is a significant decrease in osteopontin between the two sample groups. Though using a limited sample, the results suggest that the embalming process, while preserving the gross soft-tissue, does not penetrate deep enough into the bone matrices to have an effect on the embedded proteins. These results suggest that embalmed remains can be used for histo-osteological studies that use as an investigative process histochemical degradation.

2021-2022 Education and the Biological Profile

This is a collaborative project examining how the biological profile is compiled and disseminated in both casework and in education. Further, this project looked at how the education and training of the biological profile, including in the theories of the different aspects of ancestry and sex (and gender), effect the eventual biological profile assessments and importance in the field. This project uses survey data from undergraduate and graduate students, as well as educators, and practitioners. Analyses are conducted on both quantitative and qualitative data generated from said data. The goal of this research is to assess the perceived importance of the biological profile, and what additional aspects of forensic anthropology as a field should be highlighted in education and practice given then problematic nature of all aspects of the profile.

2018 Use of Laser Scanning Confocal Microscopy to Detect Diagenetic Changes in Bone

When conducting a histological analysis of archaeological bone, one aspect that must be taken into consideration is the differentiation of diagenetic alterations from bone development. The purpose of the present research is to demonstrate a novel method of mapping diagenetic mineral alterations in bone using laser scanning confocal microscopy (LSCM). Thirty-two iliac and costal histological samples were stained with toluidine blue; 16 of the samples were clinical, taken from biopsy, while 16 were from a 5th – 2nd Century BCE Apollonian site. Imaging was completed using a Carl Zeiss™ LSM 800 LSCM with Airy-Scan®, utilizing 4 pre-set lasers: 405nm DAPI, 488nm, 543nm, and 633nm; and compared with white and polarized light images generated from a Keyence VHX2000 Digital Microscope. LSCM images were taken at 10x, 20x, and 40x magnification, using both z-stack and tile-image settings to generate a three- dimensional model encompassing a cortical section. Results were measured using qualitative variation as well as quantitative histomorphometric calculations. The results of this study found strong qualitative variation between the clinical and the Apollonian samples. All samples registered on the 543nm and 633nm wavelengths, while the Apollonian samples also had localized registration on the 405nm and 488nm wavelengths. Further, this registration occurred on or near the periosteal surface. No registration of these wavelengths was seen in the clinical samples. Comparisons with unstained samples suggests that the variation in registration is due to mineral reaction with the toluidine blue. The results of this method demonstrate an additional way to map diagenetic changes in bone.

2018 Comparison of Laser Scanning Confocal Microscopy & Light Microscopy in Forensic Histo-Osteology

Traditionally, in forensic histo-osteological analysis, light microscopy is utilized as the primary mode of study. Recent advances in other modalities such as scanning electron microscopy, back scatter electron microscopy, microcomputer tomography (micro CT), and synchrotron have allowed for addition avenues of histo-osteological research. The purpose of this presentation is to demonstrate the comparison between laser scanning confocal microscopy (LSCM) and traditional light microscopy, both polarized and non-polarized. This project examined variations in bone mineral visualization, and age estimation in three populations of human individuals: clinical patients (trans iliac biopsy sections; n=16), ancient remains (rib sections from 3-5th C A.D. Apollonia; n=20), and

anatomical collection donors (femoral sections; n=5). The analyses were performed using two staining protocols for undecalcified bone specimens (basic fuchsin, and toluidine blue), and 5 microscopes: Carl Zeiss® LSM800 laser scanning confocal microscope, a Carl Zeiss® LSM880 laser scanning multi-photon microscope, and an LSM880 laser scanning spinning disk microscope, Keyence® VHX1000 Digital Light Microscope and an Nikon® Eclipse E200 Light Microscope with a Nikon® DSLR7000 camera. The results of this study found that the LSCMs all provided a better three-dimensional visualization of the bone microstructure using the basic fuchsin stain versus light microscopy, and provided better visualization of osteonal mineralization variance; the LSCM modality was not as practical in the age calculations. Results of this project demonstrate that laser scanning confocal microscopy is a good tool in bone mineral visualization and research.

2017 Reconsidering the Use of Special Stains in Histoanthropology

Histological analysis as applied to forensic anthropology has largely been centred around polarized light microscopy, and increasingly, the use of scanning electron microscopy and laser scanning confocal microscopy (LSCM). Age estimation, and determining the nature of the sample (faunal v. human bone) have been the focus of most histological work. Paleopathologists have begun to reintroduce the use of stains to elucidate microstructure, as either preferable to, or in tandem with, light microscopy, in order to narrow the scope of differential diagnoses. Pathologists have a range of special stains available for use, tailored to the diagnosis of specific conditions, but anthropologists, have not applied special stains to histo- anthropological work, likely because of the assumed constraints of the absence of soft tissue. This research aims to demonstrate the value of special staining techniques to the field of forensic anthropology by illustrating the information that can be gained from mineralized bone tissue, and surviving soft tissue, when the following special stains are applied to bone samples: Hematoxylin and Eosin (H&E), Goldner's Trichrome (GT), Toluidine Blue (TB), tartrate resistant acid phosphatase (TRAP87) and Basic Fuchsin with fluorophore dyes AlexaFluor 488 and SlowFade Gold.

2016-2017 Use of Laser Scanning Confocal Microscopy in Distinguishing Between Peri-Mortem Trauma and Post-Mortem Damage Using Histotaphonomic and Histochemical Techniques

The purpose of this research was to determine if it is possible to distinguish bone damaged peri-mortem from damage occurring five years postmortem using microstructural and histochemical techniques. This research used laser-scanning confocal microscopy to quantify the degradation of osteoclasts at margins of perimortem fractures and postmortem breaks. Additionally, this project analyzed the microstructural aspect of the fracture and break margins using qualitative and semi-quantitative methods and further quantified the natural autofluorescence. The perimortem sample for this research derived from bone sections excised from commercially reared domestic pig (Sus scrofa), while the postmortem sample originated from elements from purpose bred S. scrofa left over from a decompositional research study conducted five years ago with a known date and time of death, and documented environmental factors. The samples were divided into three approximately equal sections and differentially stained for visualisation of the specific proteins and the osteoclasts. The select sections were stained using basic fuchsin as a base stain followed by AlexaFluor 488 and SlowFade Gold Reagent. The osteoclast sections were stained using AlexaFluor 488 and an osteoclast antibody kit. A three-dimensional analysis was conducted in order to ascertain the surface structural variation between the two sample groups. The results of this study found that laser scanning confocal microscopy can be used to distinguish between the perimortem trauma group and the postmortem group. In particular, higher protein levels were seen in the perimortem trauma group as opposed to the postmortem, and a higher osteoclast level was also seen.

2015-2016 Use of Laser Scanning Confocal Microscopy in Observing & Quantifying Protein Degradation in Bone

This pilot project utilized and tested the abilities of confocal microscopy as a means of detecting protein degradation in bone. Using 4 porcine long bones, this project aimed to distinguish the sections from 2 dry elements from 2 fresh elements, as well as quantify the degradation of osteopontin and osteocalcin to determine a postmortem interval. Further, this project aimed to utilize confocal microscopy to topographically map the surface of bone as a means of distinguishing between various ages of postmortem damage. The femora were to be sectioned and polished to 10µm. The sections were imaged using laser scanning confocal microscopy to detect variation in autofluorescence, then stained using Basic Fuchsin and other probes as a means of determining if it was possible to distinguish fresh and dry bone. The results of this project found that microstructurally and histochemically, a differentiation could be made between dry and fresh bone.

2013-2014 The Consistency of Type II Craniometric Landmark Locations In Practice and the Resulting Variation in Measurements.

In recent years, standardized osteometrics have become a major aspect in the field of forensic and physical anthropology. Recent evidence, however, has shown that practitioners in the field have been using differing points to establish selected postcranial measurements. Designed as the second part to a previously accepted study, this study will focus on several selected secondary craniometric landmarks. The aim of this study is to determine how much interobserver variation exists with regards to the location of these markers, and to discern what real effects these disparate measurements have on their corresponding analytical results. This study is slated to be executed at the 66th annual scientific meeting of the American Academy of Forensic Sciences in February 2014.

2012-2013 How "Standardized" is Standardized? A Validation of Postcranial Landmark Locations.

Since the mid-1990's, osteometrics have become a major aspect in the field of physical anthropology, and particularly the subfield of forensic anthropology. However, recent anecdotal evidence has shown that practitioners have been using differing points to establish certain measurements; namely those involving the clavicle, scapula, ulna, femur, and tibia. Engaging 61 practitioners, this study examined and confirmed how extensive this discord is. Specifically, the highest consensus rate seen among practitioners was that of scapular breadth (62.3%), followed by that of the antero-posterior subtrochanteric diameter of the femur (55%). All other consensus levels fell far below these, particularly those pertaining to the physiological length of the ulna which was the most inconsistently measured bone. Furthermore, these low consensus rates yielded percent mean differences of between two and 20% of the overall measurement length.

2012 Secular Change in the Length and Breadth of the Bones Upper Limb.

While much of the secular change literature to date has focused upon long bone length as it relates to stature, limited research has dealt with changes in bone breadth. The aim of this study was to determine the changes that occur both in the breadth of upper limb long bones as well as their lengths. The current study took thirteen measurements in the humerus, radius, and ulna from 600 individuals. The data was separated by sex and analyzed by decade of birth using a Pearson's correlation analysis with a 2-tailed t-test. The results of this study suggest that while the length of the long bones increase over time, breadth has not necessarily changed in a proportional manner.

2011-2012 The effects of sharp-force thoracic trauma on the rate and pattern of decomposition (Master's Thesis).
Given the multiple factors which may alter the rate of decomposition, one of the more difficult tasks that anthropologists and pathologists face is determining of the postmortem interval (PMI). While trauma has been widely accepted as being among those factors, recent published studies have contradicted this premise. However, major issues exist with these studies. Consequently, the present study was designed to simulate a more realistic setting in an effort to settle this discrepancy in the literature. This study utilized eight porcine remains; three of which received incised wounds penetrating the thoracic cavity, three others received non-penetrating wounds, and two were designated non-trauma controls. Measurements included evaluating the total body score (TBS) on temporal and accumulated degree days (ADD). Using a two-way repeated measures ANOVA, the results of this study found that while trauma does have an influence in the pattern of decomposition, it does not influence the rate of decomposition.

Field Experience

2022 Forensic Search of Human Remains – Parry Sound, ON
Assisted a consultant with the Ontario Forensic Pathology Service in the search and recovery of scattered human remains over a multi-acre geographic area.

2022 Forensic Recovery of Human Remains – Perth, ON
Assisted a consultant with the Ontario Forensic Pathology Service in the search and recovery of human remains from a suppressed house fire.

2021 Forensic Recovery of Human Remains – Innisfil, ON
Assisted consultant for the Ontario Forensic Pathology Service in the recovery of human remains from a collapsed structure.

2017 Forensic Recovery of Human Remains (Agency Head) – Fort Erie, ON
Served as agency head, leading a team of 19 current and former students in assisting in the location and recovery of human skeletal remains in Fort Erie, ON. Responsibilities included composing and overseeing teams of students throughout the scene as they searched for the skeletal elements, as well as communicating with the scene director and additional agency heads (Ft. Erie Police and Search and Rescue Niagara) as well as assisting in developing a plan for the search of the scene as a whole.

2015 Forensic Recovery of Human Remains – Owen Sound, ON
Assisted the Ontario Medical Examiner's Office and the Ontario Fire Marshal in the location and recovery of two sets of calcined human remains from the remnants of a house fire in Owen Sound, Ontario. I further assisted the Ontario Forensic Anthropologist in the autopsy of the remains.

2011 Recovery of Porcine Remains from Single-Burial and Multiple-Burial Sites
Assisted a fellow researcher in the mapping and excavation porcine remains from two single burial sites and a multiple burial site. Remains were buried in a shallow grave in a swamp environment with little-to-no water drainage. Soft tissue and adipocere was present on all of the remains. Following the excavation of each grave, the remains were cleaned of soil, soft tissue, and adipocere.

2011 Recovery of Porcine Remains from Primary & Secondary Multiple-Burial Sites
Assisted a fellow researcher in the mapping and excavation of 3 porcine remains from a shallow grave. Soft tissue and adipocere was present on the remains. Following the excavation, the remains were cleaned and processed to remove any dirt and soft tissue present using dry and wet sifting methods and then examined for any perimortem and postmortem trauma as well as trauma indicative of the remains being removed from a primary grave.

2010 Forensic Search for Skeletal Remains
Assisted the State Forensic Anthropologist as a student volunteer at the Office of Chief Medical Examiner in the search for skeletal fragments from forensically recovered ash.

2010 Forensic Search for Human Remains

Assisted the Woburn Police Department and the Middlesex County District Attorney's Office in an open criminal investigation involving the 1989 disappearance of an individual by participating in the forensic search of human remains in a student volunteer capacity.

2009 Archaeological Field School, Ames Plantation, Somerville, TN

Offered through the University of Memphis' Department of Archaeology, the school excavated a Mississippian ceremonial mound site. During the excavation, it was found that the site was more of a long-term small scale village complete with buildings and a palisade.

Laboratory Experience

2024 Osteological Analyst, Returning Ancestors Project, Office of the Chief Coroner for Ontario, Toronto, ON

Served as an osteological analyst with the Returning Ancestors Project for the Office of the Chief Coroner for Ontario where my duties included analyzing skeletal remains, including that of a juvenile, developing a final report, and make a recommendation as to repatriation of the remains to descendant First Nations groups.

2022 – Present Forensic Anthropologist, Please Bring Me Home, Toronto, ON

Volunteer Consultant Forensic Anthropologist for the Please Bring Me Home non-profit organization developed to work with "cold" cases in the search and recovery of missing individuals. Duties include the analysis of potential osteological materials in the assessment of human and non-human material with human material being turned over to the relevant authorities. Also provide input on the search for remains given known case information, including assisting with the organization and execution of field searches.

2022 Trauma Consultant, Consultant to Consultant of Ontario Forensic Pathology Service, Toronto, ON

Engaged as a trauma consult for a Consultant with the Ontario Forensic Pathology Service examining skeletal and soft tissue elements for potential perimortem damage.

2022 Osteological Analyst, University of Toronto, Mississauga, ON

Hired by the Department of Anthropology, University of Toronto Mississauga, to assess 6 sets of human remains for the accession into the skeletal collection. Analyses included full taphonomic, pathological, and traumatic assessment, including a biological profile on a number of the remains.

2022 Osteological Analyst, University of Toronto, Mississauga, ON

Engaged by the Department of Anthropology, University of Toronto Mississauga, to assess 16 crania housed with the Division of Anatomy, University of Toronto, with an aim to determine their need for repatriation to Indigenous/First Nations groups. The analysis included a complete biological profile, pathological and traumatic assessment, and taphonomic assessment, with final reports including a needed recommendation.

2022 Osteological Analyst, Ontario Forensic Pathology Service, Toronto, ON

Hired by a Consultant with the Ontario Forensic Pathology Service to assess a juvenile cranium as to make a determination regarding "forensic significance." Analysis included a full biological profile, and pathological and taphonomic assessment.

2021 Osteological Analyst, biological profile and traumatic assessments, Ontario Forensic Pathology Service, Toronto, ON

Engaged by a Consultant with the Ontario Forensic Pathology Service to assess 3 cases with a specific aim to assess both the biological profile and conduct a traumatic assessment.

2017 Lead Osteologist, assisting Waterloo Regional Police, Waterloo, ON

Hired by the Waterloo Regional Police to analyze are report on finding regarding several zoological cases. Case involved the dissection, maceration, and analysis of skeletal elements from numerous small animals to determine and report on injury timing (peri-, postmortem), and whether human activity was involved.

2015 Assistant, Reuniting Families, Baylor University – Waco, TX

Lead a team of graduate students in assisting with the Reuniting Families program at Baylor University in Waco, TX under the guidance of Dr. Lori Baker, Ph. D.

Responsibilities included:
Processing recovered remains for skeletal analysis, conducting skeletal analysis of 9 sets of remains, and authoring reports for those remains analyzed. Analysis included determination of the biological profile, taphonomic profile, traumatic assessments, and FORDISC analyses.

2012 & 2013 Volunteer Forensic Training, Regional Forensic Center – Knoxville, TN

Volunteered twice at the Regional Forensic Center in Knoxville, TN under the guidance of Dr. Murray Marks, Ph. D., D-ABFA

Responsibilities included:
Processed backlog of human skeletal material for accession into collection and development of a complete collection inventory, observation and evaluation of proper autopsy techniques, evaluation of current and past forensic osteological material and case files, and training in proper forensic anthropology reporting techniques for medical examiner/coroner casework. Furthermore, underwent training in analysis of blunt and sharp force traumas, pathologies, and taphonomy in both adult and sub-adult remains from forensic cases, as well as the histological aspects of trauma. Additionally underwent basic training in dental anthropology, oral autopsy techniques, and dental identifications.

In addition, participated in unsupervised anatomical dissections of unautopsied human remains for the purpose of obtaining skeletal elements. Special emphasis was placed on the muscle attachments and neurovascular interaction of the complete skeletal system.

2011-2012 Graduate Student Researcher

Conducted or assisted others in data collection for theses and general research projects at Boston University School of Medicine, Department of Anatomy and Neurobiology.

Assisted in:
The planning an execution of decomposition projects including the burial of porcine remains, mapping of the various project sites, and the excavation and cleaning of the remains. In addition, I also assisted in the laboratory setting, assisting fellow researchers in maceration and analysis of the remains, as well as the preparation of osteological material for histological analysis including embedding, cutting, polishing, and staining bone.

2012 Internship at the Regional Forensic Center, Knoxville, TN

Participated in an internship under Dr. Murray Marks, Ph.D., D-ABFA at the Regional Forensic Center in Knoxville Tennessee.
Responsibilities included:
Cleaning and preparation of skeletal remains for curation and accession, removed remaining soft tissue and macerated remains, dissected sub-adult remains for skeletal preparation.

2012 Student Rotation with Forensic Pathologist

Shadowed Dr. Jennifer Hammers, Office of the Chief Medical Examiner for the Commonwealth of Massachusetts – Boston, as she conducted forensic autopsies and examinations.

2012 Primary Skeletal Assessment

Assisted in the development of the primary skeletal assessment of archaeologically significant juvenile remains from Bolivia. The remains were from a 1,500 year old site and the report generated was submitted to the University of Vermont's Department of Anthropology.

Analysis included:
Complete skeletal inventory, including segregation of commingled remains, determination of the complete biological profile, a pathological assessment, and a taphonomic assessment.

2012 Primary Skeletal Assessment

Assisted in the development of the primary skeletal assessment of historical remains from a 19th Century cemetery in Tisbury, MA. The report generated was submitted to the State Archaeologist for the Commonwealth of Massachusetts.

Analysis included:
Complete skeletal inventory, including segregation of commingled remains, determination of the biological profile, a pathological assessment, and a taphonomic assessment.

2012 Primary Skeletal Analysis

Assisted in the primary skeletal analysis of archaeological remains from the University of Vermont. The remains were from a disturbed Native American burial site and the report generated was submitted to the University of Vermont's Department of Anthropology.

Analysis included:
Complete skeletal inventory, including segregation of commingled remains, determination of the biological profile, a pathological assessment, and a taphonomic assessment.

2012 Processed Sub-Adult Skeletal Remains for Collection

Assisted in processing fetal skeletal remains for accession into Boston University's School of Medicine fetal collection.

Responsibilities included:
Created intake and processing forms, assisted in the preservation of skeletal elements using acryloid B-72 lacquer, photographed and documented skeletal elements.

2011 Forensic Entomology Workshop

Participated in a practical, hands-on workshop teaching forensic entomology principles and application, insect taxonomy, proper collection, handling and rearing of forensic insect specimens for time since death estimations. The workshop was taught Dr. Ian Dadour, Ph.D. from the Centre for Forensic Science at the University of Western Australia.

Professional Activities

2025 Abstract Review Committee, 78th Annual Scientific Meeting of the American Academy of Forensic Sciences

2024 Abstract Review Committee, 77th Annual Scientific Meeting of the American Academy of Forensic Sciences

2023 Abstract Review Committee, 76th Annual Scientific Meeting of the American Academy of Forensic Sciences.

2023 Session Moderator, 75th Annual Scientific Meeting, American Academy of Forensic Sciences

2022	Abstract Review Committee, 75th Annual Scientific Meeting, American Academy of Forensic Sciences
2022, 2023	Graduate Awards Committee, University of Toronto, Mississauga
2022	Reviewed an article for Current Forensic Science
2022	Session Moderator, 74th Annual Scientific Meeting, American Academy of Forensic Sciences
2021	Abstract Review Committee, 74th Annual Scientific Meeting, American Academy of Forensic Sciences
2017–2018	Supervised graduate work study student on histology and histochemistry
2017	Reviewed an article for American Journal of Physical Anthropology
2017	Session Moderator, Forensic Science Day, University of Toronto Mississauga
2017	Session Moderator, 69th Annual Scientific Meeting, American Academy of Forensic Science
2016	Reviewed an article for International Journal of Osteoarchaeology

Volunteerism & Outreach

2023 Co-Host, Organizer, Producer, Editor, *The Bone Club* podcast

The Bone Club is a forensic anthropological podcast shared across multiple platforms including Apple Podcasts, Spotify, Samsung Podcasts, YouTube, and others which aims to bring the science of true crime and forensic anthropology to a lay audience. It was organized by myself and is co-hosted by myself along with Stephanie Hartley and Jenna Macrae. In addition to serving as co-host, I also serve as the podcast's editor and producer. (https://media.rss.com/boneclub/feed.xml)

2023 Coordinator Author, *Speaking Truth to Power: Towards a Forensic Anthropology of Advocacy and Activism*

Served as the lead coordinator of a 12-author paper on advocacy and activism in forensic anthropology for an article submitted for review in the journal *Humans*. My duties included gathering and organizing the various authors, organizing the writing of the various sections, serving as the primary author on many of the sections including the main argument, organizing and editing the final draft, gathering citations, organizing the editorial process, and formatting and submitting the final paper to the journal.

2016 Section Keynote, Ms. Infinity Ontario 2016 Conference, University of Guelph, Guelph, ON

Delivered the keynote presentation for the Environmental Forensics section to the Ms. Infinity Ontario 2016 Conference. The conference aims to introduce regional high school girls to the practical aspects of the STEM fields. The Environmental Forensic section was designed to teach the participants selected aspects of forensics in the deduction of a mock crime including having a station touching on fingerprints, soil analysis, and botany analyses. The keynote address focused on the use of environmental parameters in assessing decomposition and developing a postmortem interval.

2014–2019, 2023 Forensic Outreach – University of Toronto, Mississauga, ON

Assisted with the Forensic Outreach Program introducing middle and high school students to the subfields related to forensic anthropology including taphonomy, human and non-human bone identification, sex estimation, and personal identification.

2014 Volunteer Teaching Assistant – University of Toronto, Mississauga, ON

Served as an assistant TA to the Forensic Anthropology Field School where I instructed a small group of students in the field aspects of forensic archaeology including investigating crime scenes, locating and excavating clandestine graves, and the recovery of remains.

2013 American Red Cross, Mid-South Chapter – Memphis, TN

Disaster Services

Responsibilities Included:

Trained for various positions including Government Liaison, Disaster Assessment, Data-Entry, as well as conducted various research projects when needed.

Services to the Armed Forces (SAF)

Responsibilities Included:

Data-entry and Client Casework, and additional projects when needed such as modernizing current practices and methods.

Memberships

Professional

American Academy of Forensic Sciences (AAFS) Fellow
- Anthropology Section
  - Ad Hoc Committee for Membership Recruitment, Retention, and Promotion, Member (2023-Present)
  - Ad Hoc Committee on Membership Requirements, Member (2021-2023); Chair (2023-2024)
  - Ad Hoc Committee on Awards, Member (2021-2024)
- Diversity Outreach Committee (Academy-Level), Member (2023-Present)

Canadian Association for Biological Anthropology (CABA) Member
- Equity Diversity and Inclusion Committee, Member (2023-Present)

Canadian Union of Public Employees, Local #3902 (CUPE 3902) Member
- Equity Funds Subcommittee, Member (2021-2024)

Paleopathology Association (PPA) Member

American Anthropological Association (AAA) Member
- Association for Queer Anthropology
- Biological Anthropology Section
- Society for Psychological Anthropology
- Human Sexuality and Anthropology Interest Group

Microscopy Society of America (MSA) Member

Microscopal Society of Canada (MSC) Member

Sigma Xi (Scientific Research Honors Society) Member

American Association of Biological Anthropologist (AABA) Student Member

Canadian Society for Forensic Science (CSFS) Student Member

Academic

Anthropology Graduate Student Union
- President (Summer 2019)

Graduate Medical Sciences Student Organization, Boston University (2010-2012)
- Forensic Anthropology Program Representative (2010-2012)

Boston University Forensic Science Society (2010-2012)

Pinnacle Honors Society (2010)

Phi Sigma Pi National Honors Fraternity (2008-2010)
- Secretary/Parliamentarian (2009-2010)

Stonewall Tigers (Gender and Sexuality Alliance) (2008-2010)
- President (2009-2010)
- Vice President (2009)
- Secretary (2008)

Languages

English – Native

Technology and Software Proficiency

Hitachi® SU3500 Scanning Electron Microscope with Bruker EDX, Carl Zeiss ® LSM 880 Multi-Photon Laser Scanning Confocal Microscope, Carl Zeiss ® LSM-800 Laser Scanning Confocal and Airy Scan Microscope, Carl Zeiss® LSM-510 META® Laser Scanning Confocal Microscope, Bitplane® Imaris™ Image Software, Carl Zeiss® Zen Blue ® Image Software, Amira© v6.2 Image Software, Struers® Accutom-100, Buehler® Isomet® low speed saw, Beuhler® MetaServ® 250 grinder-polisher, DEXIS™ digital x-ray equipment and DEXIS™ v6.0 software, ImageJ©, FORDISC© v3.1, 3-D ID© v1.0, ThreeSkull© v.2.0, Osteoware© v2.4, SPSS® v28.0 statistical software, PAST v3.0 statistical software, Surfer v10.4® mapping software, ArcGIS©, MorphoJ©, Morphologika2©, Nikon™, Sokkia™, Leica™, and Topcon™ total station, Microscribe® digitizer, standard hand- held Global Positioning Systems (Garmin®), Adobe software suites (including Acrobat Pro, Photoshop, Lightroom, Audition, and Premiere Pro, In Design, etc.). Topaz imaging suites (Photo AI, Gigapixel, Denoise AI, Sharpen AI).

References

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