

## **Allegato B**

ALESSIA RANCIARO

### **Curriculum Vitae**

“ai fini della pubblicazione”

**Place** Los Angeles, USA

**Date** 7 October 2024

#### **Part I – Education**

**2024**

Certificate in “Clinical Trials Design and Management”.

University of California San Diego, San Diego, USA.

**2008**

Doctor of Philosophy (Ph.D.), Biology curriculum Genetics.

University of Ferrara, Ferrara, Italy (collaboration with University of Maryland, USA) Thesis: “The Genetic Basis of Lactase Persistence in Africa”.

Advisors: Prof. Guido Barbujani (University of Ferrara, Italy) and Prof. Sarah A. Tishkoff (University of Maryland, USA)

Qualification: Excellent.

**2002**

Italian Biology National Board Exam Certification.

University of La Tuscia, Viterbo, Italy. Qualification: 135/150.

**2001**

Bachelor of Science (B.Sc.) and Master of Science (M.Sc.), Biology.

University La Sapienza, Rome, Italy.

Thesis: “Geographic Distribution of Morphological Traits of Human Teeth and Their Use to Reconstruct the Relationship between Different Worldwide Populations”.

Advisor: Prof. Alfredo Coppa (University La Sapienza, Roma, Italy) Qualification: 110/110 cum laude.

#### **Part II – Appointments**

##### **IIIA – Academic Appointments**

**2022- present**

Research Associate in Dr. Michael C. Campbell laboratory Department of Biological Sciences

Human and Evolutionary Biology Section, University of Southern California, Los Angeles, USA.

**2016- 2021**

Research Specialist in Dr. Sarah A. Tishkoff’s laboratory Department of Genetics, Perelman School

of Medicine, University of Pennsylvania, Philadelphia, USA.

**2013-2016**

Senior Researcher Scientist in Dr. Sarah A. Tishkoff's laboratory, Department of Genetics, Perelman School of Medicine, University of Pennsylvania, Philadelphia, USA.

**2008-2013**

Postdoctoral Researcher in Dr. Sarah A. Tishkoff's laboratory Department of Genetics, Perelman School of Medicine, University of Pennsylvania, Philadelphia, USA.

**2004-2008**

Research Assistant in Dr. Sarah Tishkoff, University of Maryland, Department of Biology, College Park, USA.

**IIIB – Other Appointments**

**June-November 2005**

Manager ad interim for running and maintaining the "Sequencing Facility Centre" at University of Maryland, College Park, USA.

**2003-2004**

University of Maryland, Department of Biology, College Park, USA. Graduate fellowship "Patterns of genetic diversity, haplotype structure, at interleukin-4 (IL-4) and interleukin-13 (IL-13) in human populations." Advisor: Dr. Sarah Tishkoff.

**2001-2003**

Department of Biopathology and Image Diagnostics, Human Genetics Laboratory, University Tor Vergata-Rome, Italy. Fellowship A.S.A.M.S.I "Gene Therapy of SMA (Spinal Muscular Atrophy) using small fragment homologous replacement SFHR technique. Advisor: Prof. Giuseppe Novelli.

**Part III – Teaching experience**

Seminars on genomic analysis and lactase persistence in human populations for the following courses at Università di Roma La Sapienza:

**From aa2018-2019 to aa2023-2024** Università di Roma La Sapienza; SCIENZE NATURALI - LAUREA TRIENNALE - SCIENZE MATEMATICHE, FISICHE E NATURALI [Ordin. 509 e 270] Course: ANTROPOLOGIA (BIO/08, dal 2024 BIOS-03/B), corso semestrale obbligatorio; 6 cfu.

**aa2016-2017 and from aa2018-2019 to aa2023-2024** Università di Roma La Sapienza; GENETICA E BIOLOGIA MOLECOLARE NELLA RICERCA DI BASE E BIOMEDICA [LM - Ordin. 2013] - LM-6 SCIENZE MATEMATICHE, FISICHE E NATURALI 2016- 2017 Università di Roma La Sapienza; GENETICA E BIOLOGIA MOLECOLARE NELLA RICERCA DI BASE E BIOMEDICA [LM - Ordin. 2013] - LM-6 SCIENZE MATEMATICHE, FISICHE E NATURALI Course: BIODIVERSITA' E EVOLUZIONE UMANA (BIO/08, dal 2024 BIOS-03/B), 6 cfu, corso opzionale.

**2022-present**

University of Southern California, Los Angeles, USA.

Teaching molecular biology techniques and genetic populations data analysis to biology undergraduate students participating in the Summer Undergraduate Research Fellowship (SURF) and the Milligan Fellowship for research.

#### **2008-2021**

University of Pennsylvania, Philadelphia, USA.

Taught and trained biology undergraduate and pre-med students in molecular biology techniques and genetic population data analysis through the Penn Undergraduate Research Mentorship (PURM) and the Center for Undergraduate Research and Fellowships (CURF). In 2015–2016, I supervised Elizabeth Eyermann (first-generation student) for her honors thesis, The Genetic Basis and Evolutionary History of Lactase Persistence in Diverse African Populations. She received the Society for Molecular Biology and Evolution (SMBE) 2016 travel award, presenting at the SMBE conference in Australia.

#### **2004, 2006, 2010, 2011, 2013, 2015**

Trained and supervised African M.Sc. and Ph.D. students during fieldwork and data collection in Kenya, Ethiopia, Tanzania, Botswana, and Cameroon. The training involved the collection and isolation of DNA, RNA, plasma, fecal, urine, and PBMCs, as well as gathering ethnographic data, physical anthropometric measurements, and conducting lactose and taste perception phenotypic tests.

#### **2003-2008**

University of Maryland, College Park, USA.

Taught and trained biology undergraduate and pre-med students in molecular biology laboratory techniques and genetic population data analysis. Among these students was Hawaa Al Thahak Al Mansouri, a first-generation student who is currently the Deputy Medical Director at Imperial College London Diabetes Centre in Abu Dhabi (UAE) and a Member of the UAE's Federal National Council.

### **Part IV - Society memberships, Awards and Honors**

Active member of the American Society of Human Genetics (ASHG).

Active member of the African Society of Human Genetics (AfSHG).

Active member of the Society for Molecular Biology and Evolution (SMBE).

**2008** Travel Award for oral presentation from the Society of Molecular of Biology Evolutionary (SMBE) meeting meeting in Barcelona, Spain, 5-8 June 2008.

**2006** Travel Award from EMBO.

Practical course: "Comparative genomics and SNPs analysis using the ensemble Genome Browser" organized by EMBL-EBI and Sanger Institute.  
Valencia, Spain, 19-21 April 2006.

**2005** Travel Award from EMBO.

Practical course "SNP genotyping and haploblock analysis" organized by Helsinki Biomedicum Center.  
Helsinki, Finland, 21-27 August 2005.

**2003-2004** Graduate Fellowship from University of "La Sapienza".  
Rome, Italy 2003-2004.

**2002-2003** Graduate Fellowship from University of “Tor Vergata”, Rome, Italy. "Gene Therapy of SMA (Spinal Muscular Atrophy) using small fragment homologous replacement SFHR technique" 2002-2003.

## **Part V - Funding Information [grants as PI-principal investigator or I-investigator]**

I am an investigator in the following grants:

**2020-2026** Examining the genetic architecture and evolutionary history of skin pigmentation.  
Funding Agency: NSF CAREER Award (National Science Foundation).

**2020-2025** Investigating cancer predisposition linked to copy number variation and structural variants, utilizing large-scale genomic data from the UK Biobank, Genomics England, and the All of Us consortia.  
Funding Agency: UOB and UK Biobank

**2019-2023** Understanding the genomic basis and evolutionary history of lactase persistence.  
NSF Standard: (National Science Foundation).

## **Part VI – Research Activities**

**Key words:** evolutionary genetics, molecular anthropology, genetic structure analysis, linguistic, African populations, fieldwork and data collection, pastoralism, lactase persistence, gene-culture coevolution, hemoglobin beta (HBB), pathogen-driven selection, genetic adaptation.

I am an evolutionary geneticist with a background in physical anthropology. Throughout my career at the University of Maryland (USA), the University of Pennsylvania (USA), and my current position at the University of Southern California (USA), my research has focused on exploring human molecular variability, genetic structure, and the population history of contemporary African populations. These efforts have resulted in numerous high-impact scientific publications, many of which have been widely cited, published, and even press-released in top-tier journals and media outlets. I have also presented my work at international conferences and engaged in ongoing collaborations.

Africa holds a unique and pivotal position in evolutionary studies due to its unparalleled genetic diversity, as demonstrated in a breakthrough paper I co-authored (Tishkoff S. et al., Science 2009). This diversity provides an invaluable resource for investigating the genetic basis of adaptation to environmental and cultural pressures. The complex demographic history of Africa, shaped by both recent and ancient migrations and selection pressures from regional environments and cultural practices, has resulted in intricate patterns of genetic adaptation. Identifying genomic regions under natural selection is essential for understanding how humans have adapted to diverse environments and for pinpointing functional variants that impact health and disease.

In this context, my research has focused on disentangling the genetic basis of adaptive traits, such as lactase persistence (LP), bitter taste receptor genes, and hemoglobin beta (HBB). I have worked to better understand how these traits evolved in response to different environmental and cultural contexts, contributing to human survival and fitness. For two decades, my research on the evolutionary history of lactase persistence (LP) in African and Middle Eastern populations seeks to unravel the complex interplay between genetic traits and their influence on dietary habits and cultural norms, particularly in African pastoralist communities. This work provides key insights into the coevolution of genes and culture, with LP serving as a classic example.

I have made substantial contributions to the study of LP in African populations, leading fieldwork, gathering laboratory data, and performing data analysis. These contributions are summarized in two key articles published in *Nature Genetics* (2007) and the *American Journal of Human Genetics* (2014), followed by a review in *Human Molecular Genetics* (2021). These publications have been widely cited, and the findings were featured in several media outlets, including the *New York Times*. My 2014 paper remains the largest of its kind, demonstrating the correlation between LP and dairying in Africa and establishing LP as an exemplary instance of gene-culture coevolution. My research involved the extensive collection of unique DNA samples (~800 individuals from 63 African populations) and lactose-tolerance test (LTT) phenotypic data from diverse African populations (~513 individuals), significantly advancing our understanding of LP and its cultural implications.

Currently, I am collaborating with my former laboratory, led by Dr. Tishkoff (University of Pennsylvania, USA), on a larger follow-up study to my previous work. We are analyzing DNA from approximately 3,000 African individuals, with a subset of about 800 having LTT data, all originating from my fieldwork. This extensive dataset promises further insights into LP and it will represent the largest study of the LP trait in Africa to date. Additionally, I am collaborating with Prof. Giovanni Destro Bisol (Università di Roma La Sapienza) to study the genetic structure and LP trait of nomads from Southern Tunisia. The genetic diversity of these populations provides a crucial framework for understanding how historical migrations and cultural shifts influenced the spread of LP, particularly within Berber and Arab communities.

To further enhance our understanding of the LP trait, I am organizing a fieldwork expedition to Saudi Arabia for data collection, including microbiome data, as part of my role as an investigator in my current PI Dr. Michael Campbell's (University of Southern California, USA) project, which focuses on the genomic basis and evolutionary history of lactase persistence in the Arabian Peninsula.

In addition, my ongoing research in collaboration with Prof. Giovanni Destro Bisol from Università di Roma La Sapienza focuses on hemoglobin beta (HBB) variants, such as those associated with sickle cell disease and other hemoglobinopathies, and how these genetic changes confer resistance to *Plasmodium falciparum* malaria in Africa. Specifically, I am working with DNA samples from rainforest hunter-gatherers (RFHG) and Bantu-speaking farming populations from Cameroon, both of which exhibit these protective variants. By studying these variants, I aim to illustrate the broader genetic adaptations that have evolved in response to environmental pressures, particularly pathogen-driven selection. This research highlights how human populations have developed genetic mechanisms to survive and thrive in challenging environments, with the adaptations in Cameroon serving as a key example of the intricate relationship between genetics and disease resistance.

### **FieldWork:**

During my time in Dr. Sarah Tishkoff's laboratory, I played a crucial role in assembling a comprehensive and unique repository of DNA samples. I planned and managed all aspects of field expeditions, spending over three years in the field. These efforts resulted in the collection of more than 5,500 samples from diverse regions of Africa, including Botswana, Ethiopia, Tanzania, Kenya, and Cameroon. This dataset represents the major African language families (Afro-Asiatic, Nilo-Saharan, Niger-Congo, Khoesan), as well as a wide range of lifestyles, diets (hunter-gatherers, pastoralists, agriculturalists, and agropastoralists), and environments (tropical forests, savannas, coastal regions, and deserts).

The collected materials—comprising ethnographic information, genomic DNA/RNA, plasma, PBMCs, and detailed phenotype data—formed the backbone of Dr. Tishkoff's laboratory and contributed to numerous high-impact scientific publications, international presentations, and both my own and my colleagues' PhD theses. My fieldwork experience also provided me with the opportunity to mentor and train several African master's and PhD students.

In my current position in Dr. Michael Campbell's laboratory at the University of Southern California (USA), I am organizing two field trips to Ghana and Saudi Arabia for two different National Science Foundation (NSF) grants in which I am a collaborator.

Below is a list of the fieldwork I managed:

**Febr 2015-Sept 2015**

Cameroon - in collaboration with Prof. Njiamshi and Prof. Fokunang (University of Yaounde' 1, Yaounde-Cameroon).

**Nov 2012 - May 2013**

Botswana - in collaboration with Dr. Wata S. Mpoloka (University of Botswana, Gaborone - Botswana).

**Sept 2016**

Botswana - Traveling through the 2012-2013 Botswana sampling sites to return results to the populations.

**Sept 2011 - March 2012**

Tanzania - in collaboration with Dr. Thomas Nyambo (MUHAS - University, Dar es Salam, Tanzania).

**Jan - June 2010**

Ethiopia - in collaboration with Dr. Gurja Belay (Addis Ababa University, Addis Ababa, Ethiopia).

**June - August 2006**

Kenya - in collaboration with Dr. Omar Sabah (KEMRI, Nairobi, Kenya).

**June - August 2004**

Kenya - in collaboration with Dr. Omar Sabah (KEMRI, Nairobi, Kenya).

**Multidisciplinary and Collaborative Research:**

A key component of my research philosophy is the integration of genetics with other anthropological disciplines, such as linguistics, archaeology, and cultural anthropology, to provide a comprehensive view of human evolutionary history. My years of research in the USA and Africa have allowed me to connect with researchers from a wide range of specialties and institutions, further strengthening my interdisciplinary and collaborative approach given me the possibility to build both longstanding and new collaborations with scientists from diverse fields around the world to explore topics related to human adaptation, population structure, and health. I am currently a co-investigator of Prof. Giovanni Destro Bisol from Università di Roma (Italy), Dr. Gianmarco Contino from the University of Cambridge (UK), and Prof. Marcia Beltrame from Federal University of Rio Grande do Sul (Brazil) on projects that combine our expertise to address these themes. In addition, I am establishing a new collaboration with Dr. Jibril B. Hirbo from Vanderbilt Medical Center (USA) (see presentation letters attached).

By combining field-based research with advanced computational methods, I strive to bridge the gaps between genetics, culture, and environment, uncovering the complex interactions that shape human populations.

Looking ahead, my goal is to establish a laboratory that operates at the intersection of these various fields, promoting an integrative approach to studying human evolutionary history and adaptation.

Current projects I am collaborating on are the following:

**2024- present University of Southern California (USA)**

Organizing a field-based collections in Saudi Arabia for understanding the genomic basis and evolutionary history of lactase persistence.

**2024 Ricerca Universitaria Ateneo Sapienza (in fase di valutazione)**

Diversity at Pancreatic Lipase Related Protein 2 (PNLIPRP2) gene in humans, with a special reference to African populations.

- 2022- present** University of Southern California (USA)  
The genetic basis and evolutionary history of skin pigmentation variation in African and African American populations.
- 2022- present** University of Southern California (USA)  
Understanding the genomic basis and evolutionary history of lactase persistence, and the dynamics of the associated gut microbiome, in pastoralist populations.
- 2022- present** University of Birmingham (UK)  
Investigating cancer predisposition linked to copy number variation and structural variants, utilizing large-scale genomic data from the UK Biobank, Genomics England, and the All of Us consortia.
- 2023-present** Partecipazione al progetto “Dieta ed evoluzione umana: diversità dei geni del gusto amaro e malaria in Africa centro-occidentale” <https://www.isita-antropologia.it/ricerca> sostenuto dall’Istituto Italiano di Antropologia.
- 2022-present** Ricerca Universitaria Ateneo Sapienza (finanziato)  
Struttura genetica fine dei nomadi della Tunisia meridionale.
- 2021-present** Ricerca Universitaria Ateneo Sapienza (finanziato)  
Struttura genomica in Bantu e Pigmei del Camerun meridionale.
- 2019-present** Ricerca Universitaria Ateneo Sapienza (finanziato)  
Arabi, Berberi e Nomadi: storia genetica della Tunisia attraverso l'analisi di genomi completi.
- 2008-present** University of Pennsylvania (USA)  
Genetic Bases for the Evolution of the Human Diet.

**Part VII – Summary of Scientific Achievements**

Product type	Number	Data Base	Start	End
Paper [international]	24	SCOPUS	2007	2024
Book	1	SCOPUS	2009	
Total Impact Factor	292.64	Web of Science		
Total Citations	3438	SCOPUS		
Average Citations per Product	143.25	SCOPUS		
Hirsch (H) index	15	SCOPUS		
Normalized H index*	0.9	SCOPUS		

\*H index divided by the academic seniority.  
(2007-2024)

**Part VIII– Selected Publications**

List of the publications selected for the evaluation. For each publication report title, authors, reference data, journal IF (if applicable), citations, press/media release (if any).

1. [Whole-genome sequencing reveals a complex African population demographic history and signatures of local adaptation.](#)  
Fan S, Spence JP, Feng Y, Hansen MEB, Terhorst J, Beltrame MH, Ranciaro A, Hirbo J, Beggs W, Thomas N, Nyambo T, Mpoloka SW, Mokone GG, Njamnshi A, Folkunang C, Meskel DW, Belay G, Song YS, Tishkoff SA.  
Cell. 2023 Mar 2;186(5):923-939.e14. doi: 10.1016/j.cell.2023.01.042.  
PMID: 36868214 Free PMC article.  
Impact Factor (IF): 45.5 Web of Science  
Citations 29 SCOPUS
2. [The genetic and evolutionary basis of gene expression variation in East Africans.](#)  
Kelly DE, Ramdas S, Ma R, Rawlings-Goss RA, Grant GR, Ranciaro A, Hirbo JB, Beggs W, Yeager M, Chanock S, Nyambo TB, Omar SA, Woldemeskel D, Belay G, Li H, Brown CD, Tishkoff SA.  
Genome Biol. 2023 Feb 24;24(1):35. doi: 10.1186/s13059-023-02874-4.  
PMID: 36829244 Free PMC article.  
Impact Factor (IF): 45.5 Web of Science  
Citations 29 SCOPUS
3. [Signatures of Convergent Evolution and Natural Selection at the Alcohol Dehydrogenase Gene Region are Correlated with Agriculture in Ethnically Diverse Africans.](#)  
McQuillan MA, Ranciaro A, Hansen MEB, Fan S, Beggs W, Belay G, Woldemeskel D, Tishkoff SA.  
Mol Biol Evol. 2022 Oct 7;39(10):msac183. doi: 10.1093/molbev/msac183.  
PMID: 36026493 Free PMC article.  
Impact Factor (IF): 10.7 Web of Science  
Citations 5 SCOPUS
4. [Human adaptation, demography and cattle domestication: an overview of the complexity of lactase persistence in Africa.](#)  
Campbell MC, Ranciaro A.  
Hum Mol Genet. 2021 Apr 26;30(R1):R98-R109. doi: 10.1093/hmg/ddab027.  
PMID: 33847744 Review.  
Impact Factor (IF): 5.121 Web of Science  
Citations 9 SCOPUS
5. [Addressing Africa's pandemic puzzle: Perspectives on COVID-19 transmission and mortality in sub-Saharan Africa.](#)  
Musa HH, Musa TH, Musa IH, Musa IH, Ranciaro A, Campbell MC.  
Int J Infect Dis. 2021 Jan;102:483-488. doi: 10.1016/j.ijid.2020.09.1456. Epub 2020 Sep 30.  
PMID: 33010461 Free PMC article. Review.  
Impact Factor (IF): 12.03 Web of Science  
Citations 57 SCOPUS
6. [African evolutionary history inferred from whole genome sequence data of 44 indigenous African populations.](#)  
Fan S, Kelly DE, Beltrame MH, Hansen MEB, Mallick S, Ranciaro A, Hirbo J, Thompson S, Beggs W, Nyambo T, Omar SA, Meskel DW, Belay G, Froment A, Patterson N, Reich D, Tishkoff SA.  
Genome Biol. 2019 Apr 26;20(1):82. doi: 10.1186/s13059-019-1679-2.  
PMID: 31023338 Free PMC article.  
Impact Factor (IF): 10.806 Web of Science  
Citations 87 SCOPUS



7. [Genomic evidence for shared common ancestry of East African hunting-gathering populations and insights into local adaptation.](#)  
 Scheinfeldt LB, Soi S, Lambert C, Ko WY, Coulibaly A, Ranciaro A, Thompson S, Hirbo J, Beggs W, Ibrahim M, Nyambo T, Omar S, Woldemeskel D, Belay G, Froment A, Kim J, Tishkoff SA.  
 Proc Natl Acad Sci U S A. 2019 Mar 5;116(10):4166-4175. doi: 10.1073/pnas.1817678116. Epub 2019 Feb 19.  
 PMID: 30782801 Free PMC article. Clinical Trial.  
 Impact Factor (IF): 9.412 Web of Science  
 Citations 37 SCOPUS
8. [Population structure of human gut bacteria in a diverse cohort from rural Tanzania and Botswana.](#)  
 Hansen MEB, Rubel MA, Bailey AG, Ranciaro A, Thompson SR, Campbell MC, Beggs W, Dave JR, Mokone GG, Mpoloka SW, Nyambo T, Abnet C, Chanock SJ, Bushman FD, Tishkoff SA.  
 Genome Biol. 2019 Jan 22;20(1):16. doi: 10.1186/s13059-018-1616-9.  
 PMID: 30665461 Free PMC article.  
 Impact Factor (IF): 10.806 Web of Science  
 Citations 60 SCOPUS
9. [Loci associated with skin pigmentation identified in African populations.](#)  
 Crawford NG, Kelly DE, Hansen MEB, Beltrame MH, Fan S, Bowman SL, Jewett E, Ranciaro A, Thompson S, Lo Y, Pfeifer SP, Jensen JD, Campbell MC, Beggs W, Hormozdiari F, Mpoloka SW, Mokone GG, Nyambo T, Meskel DW, Belay G, Haut J; NISC Comparative Sequencing Program; Rothschild H, Zon L, Zhou Y, Kovacs MA, Xu M, Zhang T, Bishop K, Sinclair J, Rivas C, Elliot E, Choi J, Li SA, Hicks B, Burgess S, Abnet C, Watkins-Chow DE, Oceana E, Song YS, Eskin E, Brown KM, Marks MS, Loftus SK, Pavan WJ, Yeager M, Chanock S, Tishkoff SA.  
 Science. 2017 Nov 17;358(6365):eaan8433. doi: 10.1126/science.aan8433. Epub 2017 Oct 12.  
 PMID: 29025994 Free PMC article.  
 Impact Factor (IF): 41.058 Web of Science  
 Citations 238 SCOPUS
10. [Limited evidence for adaptive evolution and functional effect of allelic variation at rs702424 in the promoter of the TAS2R16 bitter taste receptor gene in Africa.](#)  
 Campbell MC, Ranciaro A, Zinshteyn D, Rawlings-Goss R, Hirbo J, Thompson S, Woldemeskel D, Froment A, Omar SA, Bodo JM, Nyambo T, Belay G, Drayna D, Breslin PA, Tishkoff SA.  
 J Hum Genet. 2014 Jun;59(6):349-52. doi: 10.1038/jhg.2014.29. Epub 2014 May 1.  
 PMID: 24785689 Free PMC article.  
 Impact Factor (IF): 3.016 Web of Science  
 Citations 5 SCOPUS
11. [Genetic origins of lactase persistence and the spread of pastoralism in Africa.](#)  
 Ranciaro A, Campbell MC, Hirbo JB, Ko WY, Froment A, Anagnostou P, Kotze MJ, Ibrahim M, Nyambo T, Omar SA, Tishkoff SA.  
 Am J Hum Genet. 2014 Apr 3;94(4):496-510. doi: 10.1016/j.ajhg.2014.02.009. Epub 2014 Mar 13.  
 PMID: 24630847 Free PMC article.  
 Impact Factor (IF): 10.903 Web of Science  
 Citations 151 SCOPUS
12. [Origin and differential selection of allelic variation at TAS2R16 associated with salicin bitter taste sensitivity in Africa.](#)  
 Campbell MC, Ranciaro A, Zinshteyn D, Rawlings-Goss R, Hirbo J, Thompson S, Woldemeskel D, Froment A, Rucker JB, Omar SA, Bodo JM, Nyambo T, Belay G, Drayna D, Breslin PA, Tishkoff SA.  
 Mol Biol Evol. 2014 Feb;31(2):288-302. doi: 10.1093/molbev/mst211. Epub 2013 Oct 30.  
 PMID: 24177185 Free PMC article.  
 Impact Factor (IF): 9.105 Web of Science  
 Citations 41 SCOPUS

## **Main Press Release:**

March 2, 2023: Penn Today

“Genomic study of indigenous Africans paints complex picture of human origins and local adaptation” (by Katherine Unger Baillie)

<https://penntoday.upenn.edu/news/penn-genomic-study-indigenous-africans-paints-complex-picture-human-origins-and-local-adaptation>

February 18, 2019: Science Daily

“A shared past for East Africa's hunter-gatherers”

<https://www.sciencedaily.com/releases/2019/02/190218153215.htm>

October 12, 2017: The New York Times

“Genes for Skin Color Rebut Dated Notions of Race, Researchers Say” (by Carl Zimmer)

<https://www.nytimes.com/2017/10/12/science/skin-color-race.html?action=click&contentCollection=science&region=rank&module=package&version=highlights&contentPlacement=1&pgtype=sectionfront>

October 12, 2017: Science

“New gene variants reveal the evolution of human skin color” (by Ann Gibbson)

<http://www.sciencemag.org/news/2017/10/new-gene-variants-reveal-evolution-human-skin-color>

October 12, 2017: Penn News

“Penn-led study identifies genes responsible for diversity of human skin color” (by Katherine Unger Baillie)

<https://news.upenn.edu/news/penn-led-study-identifies-genes-responsible-diversity-human-skin-colors>

October 12, 2017: EurekaNews

“New regions of the human genome linked to skin color variation in some African populations” (by NIH/National Human Genome Research Institute)

[https://www.eurekalert.org/pub\\_releases/2017-10/nhgr-nro101117.php](https://www.eurekalert.org/pub_releases/2017-10/nhgr-nro101117.php)

October 12, 2017: NIH National Institute of Health

“New regions of the human genome linked to skin color variation in some African populations” (by NIH press)

<https://www.nih.gov/news-events/news-releases/new-regions-human-genome-linked-skin-color-variation-some-african-populations>

October 12, 2017: The Atlantic

“The Ancient Origins of Both Light and Dark Skin” (by Ed Yong)

<https://www.theatlantic.com/science/archive/2017/10/a-brief-history-of-the-genes-that-color-our-skin/542694/>

October 12, 2017: Daily News

“Gene study shows human skin tone has varied for 900,000 years” (by Collins Barras)

<https://www.newscientist.com/article/2150253-gene-study-shows-human-skin-tone-has-varied-for-900000-years/>

October 12, 2017: The Scientist

“Study Illuminates Genetics of Skin Color” (by Ashley p. Taylor)

<https://www.the-scientist.com/?articles.view/articleNo/50630/title/Study-Illuminates-Genetics-of-Skin-Color/>

October 12, 2017: Anthropology

“On the Evolution of Skin Tones In Africa” (by Kambiz Kamrani)

<https://anthropology.net/2017/10/12/on-the-evolution-of-skin-tones-in-africa/>

October 12, 2017: Inverse

“Many genetic skin variants associated with light skin originated in Africa” (by Yasmina Tayag)

<https://www.inverse.com/article/37361-skin-color-genetics-study>

March 13, 2014: The Scientist

“Origin of lactase persistence in Africa” (by Ashley Taylor)

<http://www.the-scientist.com/?articles.view/articleNo/39420/title/Origins-of-Lactase-Persistence-in-Africa/>

March 13, 2014: Penn News

“Penn Team Links Africans’ Ability to Digest Milk to Spread of Cattle Raising” (by Katherine Unger Baillie)

<https://news.upenn.edu/news/penn-team-links-africans-ability-digest-milk-spread-cattle-raising>

March 13, 2014: Smithsonian.com

“Africans’ Ability To Digest Milk Co-Evolved With Livestock Domestication” (by Helen Thompson)

<http://www.smithsonianmag.com/science-nature/africans-ability-digest-milk-came-livestock-agriculture-180950064/#KmZH4Jrftbot2iHs.99>

March 13, 2014: Science Codex

“Humans’ ability to digest milk stems from the advent of cattle domestication in Africa”

[http://www.sciencecodex.com/humans\\_ability\\_to\\_digest\\_milk\\_stems\\_from\\_the\\_advent\\_of\\_cattle\\_domestication\\_in\\_africa-129626](http://www.sciencecodex.com/humans_ability_to_digest_milk_stems_from_the_advent_of_cattle_domestication_in_africa-129626)

## Part IX– Oral Presentation

- 2019** 12<sup>th</sup> Meeting of the African Society of Human Genetics (invited speaker) Bamako, Mali, 6-7 June 2019.
- 2019** “Peopling history of Africa, a multidisciplinary perspective” (invited speaker) Geneva, Switzerland, 6-7 June 2019.
- 2019** “Penn Symposium on Cultural Evolution and Global Social Dynamics” (invited speaker) University of Pennsylvania, Philadelphia, 16-17 May 2019.
- 2018** XXII International Congress of Genetics (invited speaker) Foz do Iguaçu, Brazil 10-14 September 2018.
- 2018** 16<sup>th</sup> Annual Meeting of Society of Molecular of Biology Evolutionary (selected oral presentation). Yokohama, Tokyo, 8-12 July 2018.
- 2010** Observatoire Cniel des Habitudes Alimentaires (OCHA), “World Milk Cultures Symposium” (invited speaker) Paris, France, 6-7 May 2010.

- 2009** Postdoctoral Fellow and Graduate student Genetics Research Talks. University of Pennsylvania, Philadelphia, PA (USA), 2009.
- 2009** 4<sup>th</sup> “DNA Polymorphisms in Human Populations: Molecular Anthropology in the Genomic Area Genetics”. (invited speaker) Rome, Italy, 3-5 December 2009.
- 2008** 6<sup>th</sup> Annual Meeting of “Society of Molecular of Biology Evolutionary”. (travel award winner for graduate students) Barcelona, Spain, 5-8 June 2008.
- 2006** 3<sup>th</sup> Annual Meeting of “African Society Human Genetics” (selected oral presentation). Addis Ababa, Ethiopia, 3-5 June 2006.

## **Part X– International Meetings Attended**

- 2023** 75<sup>th</sup> Annual Meeting of “American Society of Human Genetics” (ASHG). Washington DC, USA, 1-5 November 2023.
- 2019** 12<sup>th</sup> Annual Meeting African Society of Human Genetics (AfSHG). Bamako, Mali 19-21 September 2019.
- 2019** Annual Meeting European Society Evolutionary Biology (ESEB). Turku, Finland, 19-24 August 2019.
- 2019** “Peopling history of Africa, a multidisciplinary perspective”. Geneva, Switzerland, 6-7 June 2019.
- 2019** “Penn Symposium on Cultural Evolution and Global Social Dynamics”. Philadelphia, USA 16-17 May 2019.
- 2018** XXII International Congress of Genetics. Foz do Iguaçu, Brazil 10-14 September 2018.
- 2018** 17<sup>th</sup> Annual Meeting of “Society of Molecular of Biology Evolutionary”. Yokohama, Japan 8-12 July 2018.
- 2014** 13<sup>th</sup> Annual Meeting of “Society of Molecular of Biology Evolutionary”. San Juan, Puerto Rico 8-12 June 2014.
- 2012** Society of Africanist Archaeologists 2012 (SAfA) "Exploring Diversity, Discovering Connections". Toronto, Canada, 20-23 June 2012.
- 2011** 7<sup>th</sup> Annual Meeting of “African Society of Human Genetics” (AfSHG). Cape Town, South Africa, 6-9 March 2011.

- 2009** 4<sup>th</sup> Molecular Anthropology in the Genomic Area Genetics”.  
Rome, Italy, 3-5 December 2009.
- 2009** 59<sup>th</sup> Annual Meeting of “American Society of Human Genetics” (ASHG).  
Honolulu, USA, 20-24 October 2009.
- 2008** 58<sup>th</sup> Annual Meeting of “American Society of Human Genetics” (ASHG).  
Philadelphia (USA), 11-15 October 2008.
- 2008** 6<sup>th</sup> Annual Meeting of “Society of Molecular of Biology Evolutionary” (SMBE).  
Barcelona, Spain, 5-8 June 2008.
- 2007** 5<sup>th</sup> Annual Meeting of “African Society of Human Genetics” (AfSHG).  
El Cairo, Egypt, 3-5 November 2007.
- 2007** 57<sup>th</sup> Annual Meeting of “American Society of Human Genetics” (ASHG).  
San Diego, USA, 23-27 October 2007.
- 2006** 56<sup>th</sup> Annual Meeting of “American Society of Human Genetics” (ASHG).  
New Orleans, USA, 9-13 October 2006.
- 2006** 4<sup>th</sup> Annual Meeting of “African Society of Human Genetics” (AfSHG).  
Addis Ababa, Ethiopia, 3-6 June 2006.
- 2005** The Origin of Man, Language and Languages (OMLL)”.  
Ferrara, Italy, 2-4 June 2005.
- 2004** 54<sup>th</sup> Annual Meeting of “American Society of Human Genetics” (ASHG).  
Toronto, Canada, 26-30 October 2004.
- 2002** 4<sup>th</sup> National Meeting of Italian Human Genetics Society (S.I.G.U.) .  
Orvieto, Italy, 28-30 November 2002.
- 2001** Meeting “Progetto Finalizzato Biotecnologie” organized by National Research Center (CNR).  
Genova, Italy, 28-30 October 2001.
- 1999** XIII NATIONAL CONGRESS of Italian Anthropologists.  
Roma and Sabaudia, Italy, 4-8 October 1999.

## **Part XI—Courses Attended**

- 2020** Clinical Project Management. Organized by Clinical Research Educational Services Srl (CRES).  
Roma, Italy, 18-19 April, 2020 (online due to the COVID19 pandemic).
- 2018** Bioinformatics for biologists: An introduction to programming, analysis and

reproducibility. University of Cambridge.  
Cambridge, UK, 3-7 December, 2018.

- 2014** Practical training in PBMC extraction and Immune Challenges in Dr. Mihai Netea's laboratory Radboud University Nijmegen.  
Nijmegen, The Netherlands, March 2014.
- 2006** EMBO practical course: "Comparative genomics and SNPs analysis using the ensemble Genome Browser" organized by EMBL-EBI and Sanger Institute.  
Valencia, Spain, 19-21 April, 2006.
- 2005** EMBO practical course "SNP genotyping and haploblock analysis" organized by Helsinki Biomedicum Center.  
Helsinki, Finland, 21-27 August, 2005.
- 2003** International Course-Workshop: "Genomic variation in humans and pathogens". Organized by Ricardo Fujita (Universidad de Lima, Peru), Robert H. Gilman (Johns Hopkins University, Baltimore, USA), Eduardo Tarazona-Santos (University of Maryland, College Park, USA).  
Cusco, Peru, 19-23 October, 2003.
- 2002** Theoretical-practical course "ABI prism 7000", organized by Applied Biosystems.  
Roma, Italy, 27-28 June, 2002.
- 2002** Theoretical-practical course "Practical aspects of gene transfer" organized by "Biotechnology Foundation" in collaboration with the University of Torino.  
Torino, Italy, 28-31 May, 2002.
- 2002** Course "Neuromuscular Pathologies in pediatric age" organized by "Bambin Gesù Hospital" Rome in collaboration with Italian families of SMA (Spinal Muscular Atrophy).  
Roma, Italy, 2 February, 2002.

## **Part XII- Service**

- Associated Editor Journal of Anthropological Sciences (JASs).  
<https://www.jass-anthropology.com>
- Peer-reviewer for Genetics and Molecular Biology (GMB).
- Peer-reviewer Human Genetics and Genomics Advances.
- Peer-reviewer International Journal of Infectious Diseases.
- Peer-reviewer for Evolution, Medicine and Public Health (EMPH).
- Peer-reviewer for Gene.
- Peer-reviewer for Molecular Biology and Evolutionary (MBE).
- Peer-reviewer for Public Library of Science (PLOS One).
- Peer-reviewer for American Journal of Human Genetics (AmJHG).
- External Committee Member  
Christopher Cross' PhD Defense in Human Genetics  
Biology Department, Howard University, Washington, DC, USA  
October 8, 2019.

- Assisted with scientific support and media materials in the preparation of the film “Got Lactase? The Co-Evolution of Genes and Culture” produced by Howard Hughes Medical Institute (HHMI), USA and John Rubin Production, USA (February 10, 2013).
- Consultant for American Museum Natural History (AMNH) for exhibit and Science Bulletin March 2007 “New Lactose Tolerant Mutation Found”.

Elenco numerato, datato, firmato e in formato pdf, delle pubblicazioni più significative sottoposte alla valutazione della Commissione giudicatrice:

1. [Whole-genome sequencing reveals a complex African population demographic history and signatures of local adaptation.](#)  
Fan S, Spence JP, Feng Y, Hansen MEB, Terhorst J, Beltrame MH, Ranciaro A, Hirbo J, Beggs W, Thomas N, Nyambo T, Mpoloka SW, Mokone GG, Njamnshi A, Folkunang C, Meskel DW, Belay G, Song YS, Tishkoff SA.  
Cell. 2023 Mar 2;186(5):923-939.e14. doi: 10.1016/j.cell.2023.01.042.  
PMID: 36868214 **Free PMC article.**  
Impact Factor (IF): 45.5 Web of Science  
Citations 29 SCOPUS
2. [The genetic and evolutionary basis of gene expression variation in East Africans.](#)  
Kelly DE, Ramdas S, Ma R, Rawlings-Goss RA, Grant GR, Ranciaro A, Hirbo JB, Beggs W, Yeager M, Chanock S, Nyambo TB, Omar SA, Woldemeskel D, Belay G, Li H, Brown CD, Tishkoff SA.  
Genome Biol. 2023 Feb 24;24(1):35. doi: 10.1186/s13059-023-02874-4.  
PMID: 36829244 **Free PMC article.**  
Impact Factor (IF): 45.5 Web of Science  
Citations 29 SCOPUS
3. [Signatures of Convergent Evolution and Natural Selection at the Alcohol Dehydrogenase Gene Region are Correlated with Agriculture in Ethnically Diverse Africans.](#)  
McQuillan MA, Ranciaro A, Hansen MEB, Fan S, Beggs W, Belay G, Woldemeskel D, Tishkoff SA.  
Mol Biol Evol. 2022 Oct 7;39(10):msac183. doi: 10.1093/molbev/msac183.  
PMID: 36026493 **Free PMC article.**  
Impact Factor (IF): 10.7 Web of Science  
Citations 5 SCOPUS
4. [Human adaptation, demography and cattle domestication: an overview of the complexity of lactase persistence in Africa.](#)  
Campbell MC, Ranciaro A.  
Hum Mol Genet. 2021 Apr 26;30(R1):R98-R109. doi: 10.1093/hmg/ddab027.  
PMID: 33847744 Review.  
Impact Factor (IF): 5.121 Web of Science  
Citations 9 SCOPUS
5. [Addressing Africa's pandemic puzzle: Perspectives on COVID-19 transmission and mortality in sub-Saharan Africa.](#)  
Musa HH, Musa TH, Musa IH, Musa IH, Ranciaro A, Campbell MC.  
Int J Infect Dis. 2021 Jan;102:483-488. doi: 10.1016/j.ijid.2020.09.1456. Epub 2020 Sep 30.  
PMID: 33010461 **Free PMC article.** Review.  
Impact Factor (IF): 12.03 Web of Science  
Citations 57 SCOPUS
6. [African evolutionary history inferred from whole genome sequence data of 44 indigenous African populations.](#)



Fan S, Kelly DE, Beltrame MH, Hansen MEB, Mallick S, Ranciaro A, Hirbo J, Thompson S, Beggs W, Nyambo T, Omar SA, Meskel DW, Belay G, Froment A, Patterson N, Reich D, Tishkoff SA.

Genome Biol. 2019 Apr 26;20(1):82. doi: 10.1186/s13059-019-1679-2.

PMID: 31023338 **Free PMC article.**

Impact Factor (IF): 10.806 Web of Science

Citations 87 SCOPUS

7. [Genomic evidence for shared common ancestry of East African hunting-gathering populations and insights into local adaptation.](#)

Scheinfeldt LB, Soi S, Lambert C, Ko WY, Coulibaly A, Ranciaro A, Thompson S, Hirbo J, Beggs W, Ibrahim M, Nyambo T, Omar S, Woldemeskel D, Belay G, Froment A, Kim J, Tishkoff SA.

Proc Natl Acad Sci U S A. 2019 Mar 5;116(10):4166-4175. doi: 10.1073/pnas.1817678116. Epub 2019 Feb 19.

PMID: 30782801 **Free PMC article.** Clinical Trial.

Impact Factor (IF): 9.412 Web of Science

Citations 37 SCOPUS

8. [Population structure of human gut bacteria in a diverse cohort from rural Tanzania and Botswana.](#)

Hansen MEB, Rubel MA, Bailey AG, Ranciaro A, Thompson SR, Campbell MC, Beggs W, Dave JR, Mokone GG, Mpoloka SW, Nyambo T, Abnet C, Chanock SJ, Bushman FD, Tishkoff SA.

Genome Biol. 2019 Jan 22;20(1):16. doi: 10.1186/s13059-018-1616-9.

PMID: 30665461 **Free PMC article.**

Impact Factor (IF): 10.806 Web of Science

Citations 60 SCOPUS

9. [Loci associated with skin pigmentation identified in African populations.](#)

Crawford NG, Kelly DE, Hansen MEB, Beltrame MH, Fan S, Bowman SL, Jewett E, Ranciaro A, Thompson S, Lo Y, Pfeifer SP, Jensen JD, Campbell MC, Beggs W, Hormozdiani F, Mpoloka SW, Mokone GG, Nyambo T, Meskel DW, Belay G, Haut J; NISC Comparative Sequencing Program; Rothschild H, Zon L, Zhou Y, Kovacs MA, Xu M, Zhang T, Bishop K, Sinclair J, Rivas C, Elliot E, Choi J, Li SA, Hicks B, Burgess S, Abnet C, Watkins-Chow DE, Oceana E, Song YS, Eskin E, Brown KM, Marks MS, Loftus SK, Pavan WJ, Yeager M, Chanock S, Tishkoff SA.

Science. 2017 Nov 17;358(6365):eaan8433. doi: 10.1126/science.aan8433. Epub 2017 Oct 12.

PMID: 29025994 **Free PMC article.**

Impact Factor (IF): 41.058 Web of Science

Citations 238 SCOPUS

10. [Limited evidence for adaptive evolution and functional effect of allelic variation at rs702424 in the promoter of the TAS2R16 bitter taste receptor gene in Africa.](#)

Campbell MC, Ranciaro A, Zinshteyn D, Rawlings-Goss R, Hirbo J, Thompson S, Woldemeskel D, Froment A, Omar SA, Bodo JM, Nyambo T, Belay G, Drayna D, Breslin PA, Tishkoff SA.

J Hum Genet. 2014 Jun;59(6):349-52. doi: 10.1038/jhg.2014.29. Epub 2014 May 1.

PMID: 24785689 **Free PMC article.**

Impact Factor (IF): 3.016 Web of Science  
Citations 5 SCOPUS

11. [Genetic origins of lactase persistence and the spread of pastoralism in Africa.](#)  
Ranciaro A, Campbell MC, Hirbo JB, Ko WY, Froment A, Anagnostou P, Kotze MJ, Ibrahim M, Nyambo T, Omar SA, Tishkoff SA.  
Am J Hum Genet. 2014 Apr 3;94(4):496-510. doi: 10.1016/j.ajhg.2014.02.009. Epub 2014 Mar 13.  
PMID: 24630847 **Free PMC article.**  
Impact Factor (IF): 10.903 Web of Science  
Citations 151 SCOPUS
12. [Origin and differential selection of allelic variation at TAS2R16 associated with salicin bitter taste sensitivity in Africa.](#)  
Campbell MC, Ranciaro A, Zinshteyn D, Rawlings-Goss R, Hirbo J, Thompson S, Woldemeskel D, Froment A, Rucker JB, Omar SA, Bodo JM, Nyambo T, Belay G, Drayna D, Breslin PA, Tishkoff SA.  
Mol Biol Evol. 2014 Feb;31(2):288-302. doi: 10.1093/molbev/mst211. Epub 2013 Oct 30.  
PMID: 24177185 **Free PMC article.**  
Impact Factor (IF): 9.105 Web of Science  
Citations 41 SCOPUS

5 Ottobre 2024,  
Los Angeles USA

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