

BIOGRAPHICAL SKETCH

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NAME: Monty Montano

eRA COMMONS USER NAME (credential, e.g., agency login): MontyMontano

POSITION TITLE: Scientific Director, Boston Claude D. Pepper Older Americans Independence Center;
Assistant Professor of Medicine, Harvard Medical School

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of California, Berkeley	BA	05/1987	Biochemistry
Stanford University, School of Medicine	PhD	01/1995	Genetics
Harvard School of Public Health	Postdoctoral	09/1996	Molecular Epidemiology

A. Personal Statement

I have the expertise, leadership and training necessary to successfully carry out the proposed research in the Boston Pepper Center renewal. As the Scientific Director of the Boston Claude D. Pepper Older Americans Center (OAIC) and as the Director of the Harvard University Center for AIDS Research (HU CFAR) HIV and Aging scientific working group (SWG), I am positioned uniquely across aging-related research and infectious diseases. I have led local (Boston) and international cohort studies (Botswana) to characterize transcriptional evolution of HIV, inflammation and perinatal HIV transmission, characterize muscle function and identify biomarkers of aging. My current NIH sponsored research is focused on preclinical characterization of asymptomatic middle-aged PLWH and uninfected control participants. I have served as the Chair for the HIV and Aging CSR panel on "Multidisciplinary Studies of HIV/AIDS and Aging". My experience with infectious diseases and aging research, biomarker signature discovery, international cohort studies, underscore my experience and commitment to this proposal to renew the Boston OAIC.

1. Pencina KM, Li Z, Montano M. [Objectively Measured Physical Activity in Asymptomatic Middle-Aged Men Is Associated With Routine Blood-Based Biomarkers.](#) J Gerontol A Biol Sci Med Sci. 2019 Nov 13;74(Suppl_1):S32-S37. PubMed PMID: 31724056; PubMed Central PMCID: PMC6853786.
2. Montano M, Bhasin S, D'Aquila RT, Erlandson KM, Evans WJ, Funderburg NT, Justice A, Ndhlovu LC, Ojikutu B, Pahor M, Pahwa S, Ryan AS, Schrack J, Schultz MB, Sebastiani P, Sinclair DA, Tripp J, Walker B, Womack JA, Yung R, Reeves RK. [Harvard HIV and Aging Workshop: Perspectives and Priorities from Claude D. Pepper Centers and Centers for AIDS Research.](#) AIDS Res Hum Retroviruses. 2019 Nov/Dec;35(11-12):999-1012. PubMed Central PMCID: PMC6862961.
3. Tran T, Guardigni V, Pencina KM, Amato AA, Floyd M, Brawley B, Mozeleski B, McKinnon J, Woodbury E, Heckel E, Li Z, Storer T, Sax PE, Montano M. [Atypical Skeletal Muscle Profiles in Human Immunodeficiency Virus-Infected Asymptomatic Middle-Aged Adults.](#) Clin Infect Dis. 2018 Jun 1;66(12):1918-1927. doi: 10.1093/cid/cix1121. PMCID: PMC5982799.
4. Sebastiani P, Thyagarajan B, Sun F, Schupf N, Newman AB, Montano M, Perls TT. [Biomarker signatures of aging.](#) Aging Cell. 2017 Apr;16(2):329-338. doi: 10.1111/ace.12557. Epub 2017 Jan 6. PubMed PMID: 28058805; PubMed Central PMCID: PMC5334528.

B. Positions and Honors

2003 - 2014	Principal Investigator, Department of Medicine, Boston Medical Center
2003 - 2014	Executive Member of the Institutional Review Board, Boston Medical Center
2008 - present	Director of Pilot Studies Core at Boston OAIC Pepper Center
2009 - 2010	Chairman, Education Committee at Program in Genetics and Genomics
2011 - 2015	NIH study section (chartered member of AIDS and Clinical Epidemiology: ACE)
2012 - 2014	Consultant, PLoS Medicine (Freelance Associate Editor)
2014 – present	Faculty of Medicine, Harvard Medical School
2014 - present	MyoSyntax. DUNS number 0784446990000. Dr. Montano is the founder of MyoSyntax and consults on a study of muscle tissue in men undergoing severe energy deficit with or without testosterone supplementation (NCT02734238). There is no overlap or conflict with this proposal.

Honors, Awards, Committees

1992	Smithsonian Institute, Film, “Inventing the cell sorter,” Participant, Stanford University
1994	Dean’s Fellowship, Stanford University
1994	Immunobiology Fellowship, Grant AI 07290, Stanford University
1995	MBL Molecular Evolution workshop, Woods Hole, MA
1999	Designed a molecular virology laboratory onsite, Botswana, Africa
2007	MBL Molecular Biology of Aging workshop, Woods Hole, MA
2011	MBL Frontiers in Stem Cell Biology workshop, Woods Hole, MA
2011- 2015	Chartered member, NIH study section: ACE (AIDS Clinical and Epidemiology)

C. Contributions to Science

Prior to antiretroviral therapy (ART), HIV infection was described as a “slim disease”, a profound muscle wasting resembling age-associated loss in muscle mass and function, i.e., sarcopenia. In the current era of effective ART, and despite viral suppression, frailty and functional decline is more commonly observed in the infected than in age-matched uninfected individuals. Chronic infection increases the risk for comorbidities associated with the elderly, raising the possibility of an accelerated aging process. How infection compromises muscle homeostasis leading to wasting in acute infection and frailty in chronic infection is the narrative that drives my research program. My funded research reflects a translational program of excellence to understand HIV pathogenesis as the epidemic has matured.

1. Immune profiles and HIV transmission in Botswana. Research related to Dr. Montano’s first R01 (**2003-2007**) evaluated HIV infection and cell-associated transmission in Africa.
 - a) Montano M, Rarick M, Sebastiani P, Brinkmann P, Skefos J, Ericksen R. [HIV-1 burden influences host response to co-infection with *Neisseria gonorrhoeae* in vitro.](#) Int Immunol. 2006 Jan;18(1):125-37. Epub 2005 Dec 13. PubMed PMID: 16352629.
 - b) Montano M, Russell M, Gilbert P, Thior I, Lockman S, Shapiro R, Chang SY, Lee TH, Essex M. [Comparative prediction of perinatal human immunodeficiency virus type 1 transmission, using multiple virus load markers.](#) J Infect Dis. 2003 Aug 1;188(3):406-13. Epub 2003 Jul 14. PubMed PMID: 12870122.
 - c) Montano MA, Nixon CP, Ndung'u T, Bussmann H, Novitsky VA, Dickman D, Essex M. [Elevated tumor necrosis factor-alpha activation of human immunodeficiency virus type 1 subtype C in Southern Africa is associated with an NF-kappaB enhancer gain-of-function.](#) J Infect Dis. 2000 Jan;181(1):76-81. PubMed PMID: 10608753.
 - d) Montano MA, Novitsky VA, Blackard JT, Cho NL, Katzenstein DA, Essex M. [Divergent transcriptional regulation among expanding human immunodeficiency virus type 1 subtypes.](#) J Virol. 1997 Nov;71(11):8657-65. PubMed PMID: 9343223; PubMed Central PMCID: PMC192329.

2. Immune – muscle crosstalk. Research related to Dr. Montano’s second R01 (**2007-2013**), which received a first percentile score, evaluated crosstalk between immune regulators and muscle tissue homeostasis in the

context of infection.

- a) Tran T, Guardigni V, Pencina KM, Amato AA, Floyd M, Brawley B, Mozeleski B, McKinnon J, Woodbury E, Heckel E, Li Z, Storer T, Sax PE, Montano M. [Atypical Skeletal Muscle Profiles in HIV+ Asymptomatic Middle-Aged Adults](#). Clin Infect Dis. 2018 Jun 1;66(12):1918-1927. doi: 10.1093/cid/cix1121. PMID: 29293942.
- b) Banerjee C, Ulloor J, Dillon EL, Dahodwala Q, Franklin B, Storer T, Sebastiani P, Sheffield-Moore M, Urban RJ, Bhasin S, Montano M. [Identification of serum biomarkers for aging and anabolic response](#). Immun Ageing. 2011 Jun 20;8(1):5. doi: 10.1186/1742-4933-8-5. PubMed PMID: 21689392; PubMed Central PMCID: PMC3135554.
- c) Long KK, Pavlath GK, Montano M. [Sca-1 influences the innate immune response during skeletal muscle regeneration](#). Am J Physiol Cell Physiol. 2011 Feb;300(2):C287-94. doi: 10.1152/ajpcell.00319.2010. Epub 2010 Dec 1. PubMed PMID: 21123737; PubMed Central PMCID: PMC3043632.
- d) Montano M, Flanagan JN, Jiang L, Sebastiani P, Rarick M, LeBrasseur NK, Morris CA, Jasuja R, Bhasin S. [Transcriptional profiling of testosterone-regulated genes in the skeletal muscle of human immunodeficiency virus-infected men experiencing weight loss](#). J Clin Endocrinol Metab. 2007 Jul;92(7):2793-802. Epub 2007 Apr 17. PubMed PMID: 17440010.

3. HIV and Aging. Dr. Montano's existing R01 is enrolling a longitudinal cohort of adults to evaluate biomarkers for muscle function and aging in the context of chronic HIV infection (**2014-2019**). Dr. Montano's laboratory is also keenly interested in HIV eradication efforts and was the first to discover a novel pathway for reactivating latent HIV as a rationale for purging HIV, R56 (**2013-2015**).

- a) Tran T, Guardigni V, Pencina KM, Amato AA, Floyd M, Brawley B, Mozeleski B, McKinnon J, Woodbury E, Heckel E, Li Z, Storer T, Sax PE, Montano M. [Atypical Skeletal Muscle Profiles in HIV+ Asymptomatic Middle-Aged Adults](#). Clin Infect Dis. 2018 Jun 1;66(12):1918-1927. doi: 10.1093/cid/cix1121. PMID: 29293942.
- b) Sebastiani P, Thyagarajan B, Sun F, Schupf N, Newman AB, Montano M, Perls TT. [Biomarker signatures of aging](#). Aging Cell. 2017 Apr;16(2):329-338. doi: 10.1111/ace1.12557. Epub 2017 Jan 6. PubMed PMID: 28058805; PubMed Central PMCID: PMC5334528.
- c) Baranoski AS, Harris A, Michaels D, Miciek R, Storer T, Sebastiani P, Montano M. [Relationship between poor physical function, inflammatory markers, and comorbidities in HIV-infected women on antiretroviral therapy](#). J Womens Health (Larchmt). 2014 Jan;23(1):69-76. doi: 10.1089/jwh.2013.4367. Epub 2013 Nov 12. PubMed PMID: 24219874; PubMed Central PMCID: PMC3880911.
- d) Kusko RL, Banerjee C, Long KK, Darcy A, Otis J, Sebastiani P, Melov S, Tarnopolsky M, Bhasin S, Montano M. [Premature expression of a muscle fibrosis axis in chronic HIV infection](#). Skelet Muscle. 2012 Jun 7;2(1):10. doi: 10.1186/2044-5040-2-10. PubMed PMID: 22676806; PubMed Central PMCID: PMC3407733.

List of Published Work in My Bibliography (NCBI):

<https://www.ncbi.nlm.nih.gov/myncbi/monty.montano.1/bibliography/public/>

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

P30 AG031679-10 6777

Montano (PI)

07/01/18-06/30/21

Boston OAIC Pilot and Exploratory Studies Core

My role is to oversee the pilot and exploratory studies core activities within the Boston OIAC (Program PI: Bhasin, S.).

Role: Core PI

HU CFAR P30AI060354-17 7331

Montano (PI)

08/01/19-07/31/21

HIV and Aging scientific working group

The goal of this subaward is to serve as Director of the HIV and Aging Scientific Working Group, as part of the HU CFAR (PI: B. Walker)

Role: Subaward PI

P30 AG031679-10S1 Montano (PI) 09/15/20-06/30/21

Boston OAIC administrative supplement

Defining inflammaging and monocyte dysfunction in COVID-19 disease

Pilot and Exploratory Studies Core

My role is to oversee the pilot and exploratory studies core activities within the Boston OAIC (Program PI: Bhasin, S.).

Role: Core PI

1R21AG055415-01 Montano (PI) 09/01/17-05/31/20

Role of ART in novel HIV-associated myopathy

The goal of this study is to evaluate physical function in association with treatment regimens in the MATCH cohort.

Role: PI

Completed Research Support

1R01 AI108541-01A1 Montano (PI) 06/01/14-05/31/19

Biomarkers for muscle function and aging in chronic HIV infection (MATCH Study)

The goal of this study is to evaluate muscle function in middle-aged men and women with HIV infection.

Role: PI

1R56 AI102844-01A1 Montano (PI) 08/01/13-07/31/15

Simultaneous latent HIV reactivation and cytokine gene suppression.

The major goal of the study was to characterize muscle growth and differentiation effects in the context of chronic infection.

Role: PI

1R01 AR055115-01A1 Montano (PI) 08/28/07-06/30/12

Macrophage-Muscle precursor cell interaction in the context of HIV infection.

The major goal of the study was to characterize muscle growth and differentiation effects in the context of chronic HIV infection.

Role: PI

1R01 AI051183-01A2 Montano (PI) 04/01/03-03/31/06

Molecular analysis of HIV-1C transmission cofactors.

The major goal of the study was to identify cellular determinants of mother-to-infant transmission of HIV in Africa.

Role: PI