Nausica Arnoult, PhD January 2023

1. PERSONAL INFORMATION

Full Name Nausica Arnoult
Email: nausica.arnoult@colorado.edu
Lab website: *www.arnoultlab.org*
Google scholar: *https://scholar.google.com/citations?user=MsSfJH0AAAAJ&hl=en&oi=ao*
ORCID: 0000-0003-2633-0270

Positions held

08/2018-present Assistant Professor of Molecular, Cellular, and Developmental Biology
University of Colorado Boulder

Education and Training

09/2005-09/2009 PhD in Molecular Biology,
UPMC and Institut Curie, Paris, France
Mechanisms of telomere replication.
Laboratory of Dr. Arturo Londoño.

02/2010-06/2012 Postdoctoral Research Fellow,
de Duve Institute, Brussels, Belgium
Telomere chromatin and TERRA lncRNA regulation.
Laboratory of Dr. Anabelle Decottignies.

07/2012-07/2018 Postdoctoral Research Fellow,
The Salk Institute, La Jolla, CA
Regulation of the DSB repair pathway choice.
Lab of Dr. Jan Karlseder.

2016 EMBO Laboratory Management Course

2019 Completion of RIO "PI Academy"

2. HONORS & AWARDS

Awards

2022 CU Boulder "Our Space, Our Future Grand Challenge" seed grant
2021 V Foundation for Cancer Research – V Scholar Award
2021 Boettcher Web-Waring Investigator Award for Biomedical Research
2019 AFAR and Glenn Foundation for Junior Faculty Award
2016 Salk Women and Science Award
2014 Philippe Foundation Postdoctoral Award
2010 Formal Prize of Chancellerie des Universités, Best Thesis in Biology in Paris
2010 Ph.D. Thesis Award, ARC (French Association for Cancer Research)
2008 Scientific Popularization Award, ARC (French Association for Cancer Research)
2008 René Descartes Prize for PhD thesis students, Young Researchers Meeting, Paris
2008 French Society of Genetics prize for Best Talk, Young Researchers Meeting, Paris

Fellowships

2016-2018 Salk Institute Glenn Center for Aging Research Fellow
2013-2016 Human Frontiers Science Program, Long Term Fellow
2011-2012 Télévie (Belgian Association for Cancer Research) postdoctoral fellow
2010-2011 De Duve Institute postdoctoral fellow
2008-2010 ARC (French Association for Cancer Research) PhD fellow
2005-2008 French Ministry of Education and Research PhD fellow

Press

12/2022 Interview for WOSU Public media. https://wosu.org/television/aging-well-qed-with-dr-b/
03/2020 Portrait published in the Letter of the French Consulate in Los Angeles

3. SUPPORT

Active research grants

Boettcher Webb-Waring Foundation for Biomedical Research Award 07/2021-06/2024
PI: Nausica Arnoult
Understanding and exploiting the critical dependency to APE2 in homologous recombination-deficient cancers.
Project total: $235,000

NIH/NIGMS R35 MIRA 1R35GM143108-01 08/2021-07/2026
PI: Nausica Arnoult
Deciphering the role of heterochromatin in telomere function and maintenance mechanisms.
Project total: $1,250,000 direct costs

V Foundation for Cancer Research – V Scholar Award 12/2021-11/2023
PI: Nausica Arnoult
Targeting Alternative End-Joining to eliminate homologous recombination-deficient cancers and overcome resistance to PARP inhibitors.
Project total: $200,000

NIH/NCI R01 1R01CA266100-01 12/2021-11/2026
PI: Arnoult
Deciphering the function of the APE2 nuclease during repair by alternative end-joining and its role in HR-deficient cells.
Project total: $1,161,405 direct costs

RIO Seed Grant "Our Space our Future" Grand challenge program 07/2022-01/2024
PI: Arnoult
Effects of microgravity environment on the repair of DNA double stranded breaks
Project total: $50,000

UCCC-MCDB Pilot grant 09/2023-08/2024
Co-PIs: Arnoult and Bitler
Determining the interplay between PARP inhibitor response and microhomology mediated end joining DNA repair.
Project total : $100,000 (Arnoult : $50,000)

Active Trainee Fellowships

National Science Foundation 07/2022-06/2025
Graduate Research Fellowship Program
Awarded to: Erin Taylor, MCDB graduate student
Project total: $138,000.

Funding of Current Undergraduate Researchers:

Shreya Shrestha
2023 $5,000 Boettcher Scholar Collaborative grant
2022 $3,000 Undergraduate Research Opportunity Program (UROP)

Sophie Whitehead
2023 $3,000 Undergraduate Research Opportunity Program (UROP)

Shane Brelinski
2023 $10,459 NIH/NIGMS Supplement for summer undergraduate research

4. PUBICATIONS (20)

h-index: 16
i10-index: 18
Total citations: 2309 (Google Scholar, as of January 2024)
*IF: Impact Factor for year of publication.
1-Postdoc in Arnoult lab
2-Graduate student in Arnoult lab
3-Undergraduate student in Arnoult lab
4- Research Assistant in Arnoult lab

Publications As an Assistant Professor at CU Boulder

#20 2023 BioRxiv (preprint)
Nguyen LL, Watson ZL, Ortega R[2], Woodruff ER, Jordan KR, Iwanaga R, Yamamoto TM, Bailey CA, Jeong AD, Guntupalli SR, Behbakht K, Gbaja V, Arnoult N, Chuong EB, Bitler BG. *Combinatory EHMT and PARP inhibition induces an interferon response and a CD8 T cell-dependent tumor regression in PARP inhibitor-resistant models.* PMID: 36865165

#19 2023 Molecular Cell IF: 19.3
Fleury H[1], MacEachern M[3,4], Stiefel CM, Anand R, Sempeck C[4], Nebenfuehr B[2], Maurer-Alcalà K[4], Ball K[4], Proctor B[2], Belan O, Taylor E[2], Ortega R[2], Dodd B[4], Weatherley L[4], Dansoko D[3], Leung JW, Boulton SJ, Arnoult N. *The APE2 nuclease is essential for DNA double strand break repair by microhomology-mediated end-joining.* 2023 May 4;83(9):1429-1445.e8. doi: 10.1016/j.molcel.2023.03.017. PMID: 37044098

#18 2021 RNA IF: 3.95
Viceconte M, Loriot A, Lona Abreu P, Scheibe M, Fradera Sola F, Butter F, De Smet C, Azzalin CM, Arnoult N**, Decottignies A**. *PAR-TERRA is the main contributor to telomeric repeat-containing RNA transcripts in normal and cancer mouse cells.* RNA. 2021 Jan;27(1):106-121. PMID: 33127860 (**co-corresponding authors)

Publications As a Postdoc

#17 2017 Nature IF: 41.58
Arnoult N, Correia A, Ma J, Merlo A, Garcia-Gomez S, Maric M, Tognetti M, Benner CW, Boulton SJ, Saghatelian A, Karlseder J. *Regulation of DNA Repair pathway choice in S/G2 by the NHEJ inhibitor CYREN*. 2017 Sept; 549(24023):548-552. PMID: 28959974

#16 2015 Nat. Str. Mol. Biol. IF: 13.34
Arnoult N, Karlseder J. *Complex interactions between the DNA damage response and mammalian telomeres.* 2015 Nov; 22(11):859-866. PMID: 26581520

#15 2014 Cell IF: 32.24
Arnoult N, Karlseder J. *ALT telomeres borrow from meiosis to get moving*. 2014 Sep 25;159(1):11-2. PMID: 25259914

#14 2014 Nat. Str. Mol. Biol. IF: 13.31
O'Sullivan RJ, Arnoult N, Lackner DH, Oganesian L, Haggblom C, Corpet A, Almouzni G, Karlseder J. *Rapid induction of alternative lengthening of telomeres by depletion of the histone chaperone ASF1.* 2014 Feb; 21(2):167-74. PMID: 24413054

#13 2014 Mol Cell Biol. IF: 4.78
Boros J*, Arnoult N*, Stroobant V, Collet JF, Decottignies A. *Polycomb repressive complex 2 and H3K27me3 cooperate with H3K9 methylation to maintain heterochromatin protein 1α at chromatin.* 2014 Oct 1; 34(19):3662-74. PMID: 25047840 (*Equal contribution)

#12 2014 Nucleic Acid Res. IF: 9.11

Episkopou H, Draskovic I, Van Beneden A, Tilman G, Mattiussi M, Gobin M, Arnoult N, Londoño-Vallejo A, Decottignies A. *Alternative Lengthening of Telomeres is characterized by reduced compaction of telomeric chromatin.* 2014 Apr; 42(7):4391-405. PMID: 24500201

#11 2013 Genome Res. IF: 13.85
Scheibe M*, Arnoult N*, Kappei D, Buchholz F, Decottignies A, Butter F, Mann M. *Quantitative interaction screen of telomeric-containing RNA reveals novel TERRA regulators.* 2013, 23(12):2149-57. PMID: 23921659 (*Equal contribution)

#10 2013 Frontiers in Onc. IF: 4.41
Van Beneden A, Arnoult N, Decottignies A. *Telomeric RNA expression: length matters.* 2013, 3:178. PMID: 23847766

#9 2012 Nat. Str. Mol. Biol. IF: 11.63
Arnoult N*, Van Beneden A*, Decottignies A. *Telomere length regulates human TERRA expression through increased trimethylation of telomeric H3K9 and HP1a.* 2012, 19:948–956. PMID: 22922742 (*Equal contribution)

#8 2012 Epigenetics IF: 4.58
Tilman G, Arnoult N, Lenglez S, Van Beneden A, Loriot A, De Smet C and Decottignies A. *Cancer-linked satellite 2 DNA hypomethylation does not regulate Sat2 non-coding RNA expression and is initiated by heat shock pathway activation. Epigenetics.* Aug 1;7(8):903-13. PMID: 22722874

Publications As a Graduate Student

#7 2013 Nucleic Acid Res. IF: 8.81
Novo C, Arnoult N, Bordes WY, Castro-Vega L, Gibaud A, Dutrillaux B, Bacchetti S, Londoño-Vallejo A. *The heterochromatic caps in great Apes impact telomere metabolism.* 2013, 41(9):4792-801. PMID: 23519615

#6 2010 Plos Genetics IF: 9.54
Arnoult N, Schlutz-Bolard C, Letessier A, Draskovic I, Bouarich R, Campisi J, Kim S, Boussouar A, Magdinier F, Gilson E, Londoño-Vallejo JA. *Replication timing of human telomeres is chromosome arm-specific, influenced by subtelomeric structures and connected to nuclear localization.* 2010, 6(4):e1000920. PMID: 20421929

#5 2009 Genes & Dev. IF: 8.88
Arnoult N, Saintomé C, Ouriac-Garnier I, Riou JF, Londoño-Vallejo JA. *Human POT1 is required for efficient telomere C-strand replication in the absence of WRN.* 2009, 23(24):2915-24. PMID: 20008939

#4 2009 Proc. Natl. Acad. Sci. IF: 9.43
Draskovic I, Arnoult N, Steiner V, Bacchetti S, Lomonte P, Londoño-Vallejo JA. *Probing PML body function in ALT cells reveals spaciotemporal requirements for telomere recombination.* 2009, 106(37):15726-31. PMID: 19717459

#3 2009 Oncogene IF: 7.14
Tilman G, Loriot A, Van Beneden A, Arnoult N, Londoño-Vallejo JA, De Smet C, Decottignies A. *Subtelomeric DNA methylation is not required for telomeric sister chromatid exchanges in ALT cells.* 2009, 28(14):1682-93. PMID: 19252523

#2 2008 Cyt. Genome Res. IF: 2.65
Arnoult N, Shin-Ya K, Londoño-Vallejo JA. *Studying telomere replication by Q-CO-FISH: the effect of telomestatin, a potent G-quadruplex ligand.* 2008, 122(3-4):229-36. PMID: 19188691

#1 2008 Nature IF: 31.43
Courbet S, Gay S, Arnoult N, Wronka G, Anglana M, Brison O, Debatisse M. *Replication fork movement sets chromatin loop size and origin choice in mammalian cells.* 2008, 455(7212):557-60. PMID: 18716622

5. TEACHING

CU Boulder Teaching as Main Instructor:

Semester	Level	Course	# students	In charge of:	Teaching type:
Fall 2019	Undergrad	MCDB3135: Cell Biol I	238	Full course	In person
Fall 2020	Undergrad	MCDB3135: Cell Biol I	211	Half course	Remote
Fall 2021	Undergrad	MCDB3135: Cell Biol I	203	Half course	Hybrid

Spring 2022	Undergrad	MCDB3135: Cell Biol I	114	Half course	In person
Fall 2022	Undergrad	MCDB3135: Cell Biol I	226	Half course	In person
Spring 2023	Undergrad	MCDB3135: Cell Biol I	105	Half course	In person
Fall 2023	Undergrad	MCDB3135: Cell Biol I	189	Half course	In person

Undergraduate course: MCDB 3135 “Cell Bio I”
This is a large lecture-based undergraduate course focusing on the central dogma of biology: DNA and RNA structure, DNA organization, replication, and repair, transcription and RNA processing, protein synthesis, and regulation of gene expression. This course covers the basic mechanisms in bacteria as well as the more complex mechanisms in lower and higher Eukaryotes. Beyond the primary understanding of these molecular mechanisms, the course also covers the main methods in molecular biology, how to use them and how to analyze them.

CU Boulder Teaching as Contributor:

Semester	Level	Course	Role
Fall 2018	Grad	MCDB 5230: CORE	Taught 2 classes on Telomeres, Genome Stability & Cancer
Fall 2019	Grad	MCDB 5230: CORE	Taught 2 classes on Telomeres, Aging & Cancer
Fall 2020	Grad	MCDB 5230: CORE	Taught 2 classes on DNA repair & Cancer
Fall 2021	Grad	MCDB 5230: CORE	Taught 4 classes on DNA repair & CRISPR-Cas9
Spring 2022	Grad	BCHM 5801: SCR course	Taught 2 classes on techniques of genome engineering
Fall 2022	Grad	MCDB 5230: CORE	Taught 4 classes on DNA repair & CRISPR-Cas9
Fall 2023	Grad	MCDB 5230: CORE	Taught 1 class on DNA repair.