

# Megan Lin Costa

(978) 587-6273 • [megan.costa@jax.org](mailto:megan.costa@jax.org)  
<https://www.linkedin.com/in/megancosta15/>

## EDUCATION

---

**M.A., Biotechnology** Sep 2020-May 2021  
**B.A., Biochemistry and Molecular Biology**, Minor in Spanish Sep 2017-May 2021  
Boston University Boston, MA  
Thesis: Exploring EHMT2 Isoforms and their Role in Cancer Progression

BA/MA Dual Degree Program: Degrees conferred simultaneously upon completion of an independent graduate research project under the direction of Dr. Ana Fiszbein. Completed 5-yr program in 4 years.

## RESEARCH EXPERIENCE

---

**The Jackson Laboratory for Genomic Medicine** Jun 2021-Present  
Postbaccalaureate Researcher, Full-time  
PI: Dr. Roel Verhaak

- Collaborate with senior lab members to explore how oncogenic extrachromosomal DNA (ecDNA) elements contribute to tumor growth and treatment resistance in cancer
- Maintain primary, established, and induced pluripotent cell lines
- Construct plasmids for a CRISPR-based genome imaging system consisting of a sgRNA complementary to ecDNA breakpoint sequences, an RNA-binding protein conjugated with green fluorescent proteins, and a catalytically inactive Cas9 protein
- Determine differential effects of various chemotherapies on ecDNA copy number in ecDNA+ HeLa cell lines by cytogenetic analyses combined with confocal microscopy
- Drive an independent project aimed at investigating the horizontal genetic transfer of ecDNA as a potential contributor to intratumoral heterogeneity and treatment failure in glioma
- Lead discussions of recent publications at lab meetings and journal clubs

**Boston University** Sep 2020-Apr 2021  
Graduate Research Assistant, Part-time  
PI: Dr. Ana Fiszbein

- Explored how alternative RNA-processing events influence EHMT2 (G9a) gene expression
- Analyzed G9a patient-derived RNA-seq data in 20 cancer types using The Cancer Genome Atlas (TCGA) database, focusing on exon 10 inclusion and alternative first exon usage
- Drove an independent project comparing G9a expression levels by isoform in cancer tissues and adjacent normal tissues using statistical methods in Excel and the ggplot package in R
- Constructed a research proposal summarizing previous literature findings, outlining project aims, presenting experimental results, and suggesting future directions
- Presented experimental design, findings, and significance at internal lab meetings, and defended master's thesis at annual BU Research Symposium

## Curriculum Vitae – Megan L. Costa

### PRESENTATIONS

---

**Costa M, Gujar A, Yi E, Verhaak R. Modeling the Lateral Genetic Transfer of Extrachromosomal DNA (ecDNA) *in vitro*.** Poster Presentation Submitted to the 2023 Jackson Laboratory Scientific Symposium.

**Costa M, Gujar A, Yi E, Verhaak R. Modeling the Lateral Genetic Transfer of Extrachromosomal DNA (ecDNA) *in vitro*.** Poster Presentation Submitted to the American Association for Cancer Research 2023 Annual Meeting.

**Costa M. Modeling the Lateral Genetic Transfer of Extrachromosomal DNA (ecDNA) *in vitro*.** Jackson Laboratory Trainee Talks. October 2022. Oral Presentation.

**Costa M. Engineering a co-culture system to model ecDNA transfer *in vitro*.** Jackson Laboratory Cancer Biology Meeting. June 2022. Oral Presentation.

**Costa M. Generating an optimized CRISPR system and drug titration data for ecDNA genetic screens.** Jackson Laboratory Cancer Biology Meeting. October 2021. Oral Presentation.

**Costa M. Exploring EHMT2 isoforms and their role in cancer progression.** Boston University Biochemistry and Molecular Biology Research Symposium. April 2021. Oral Presentation.

### PUBLICATIONS

---

ORCID: 0000-0001-5172-6782

Amin SB, Gujar A, Yi E, Kang W, **Costa M**, Sjogren G, Gabriel P, Maher L, Dickinson P, Packer R, Courtois E, Robson P, Lee C, Verhaak R. Identifying drivers in the converging syntenic aneuploidies of spontaneous canine and pediatric high-grade glioma using imaging-based an arrayed CRISPR-Cas9 phenotypic screen. <https://doi.org/10.1158/1538-7445.AM2022-3106>. (Manuscript in progress)

Yi E, Gujar AD, Guthrie M, Kim H, Zhao D, Johnson KC, Amin SB, **Costa ML**, Yu Q, Das S, Jilette N, Clow PA, Cheng AW, Verhaak RGW. Live-cell imaging shows uneven segregation of extrachromosomal DNA elements and transcriptionally active extrachromosomal DNA hubs in cancer. *Cancer Discovery* 2021;12(2): 468-483 <https://doi.org/10.1158/2159-8290.CD-21-1376>.

### SKILLS

---

**Wet Lab:** Cytogenetic Analyses, DNA Miniprep, DNA/RNA Isolation, DNA Subcloning, Fluorescence in Situ Hybridization (FISH), Gel Electrophoresis/PCR, Lentiviral Preparation and Transduction, Primary Cell Culture, iPSC Culture, iPSC Differentiation, Confocal Microscopy, Light Microscopy, Widefield Microscopy

**Dry Lab:** MS-Excel, GraphPad Prism, ImageJ, Las X, ggplot in R, RNA-seq Analysis

**Languages:** English (native proficiency), Spanish (limited working proficiency)

## Curriculum Vitae – Megan L. Costa

### CONFERENCE ATTENDANCE

---

7<sup>th</sup> Annual Jackson Laboratory Scientific Symposium, Portland, ME, May 2023 (Poster Submitted)  
American Association for Cancer Research, Orlando, FL, April 2023 (Poster Submitted)  
6<sup>th</sup> Annual Jackson Laboratory Scientific Symposium, Portland, ME, May 2022  
Society for Neuro-Oncology, Boston, MA, November 2021  
Boston University Biochemistry and Molecular Biology Research Symposium, Boston, MA, April 2021

### HONORS AND AWARDS

---

**Latin Honors – Cum Laude** May 2021  
Boston University  
Awarded for being in the top 15% of the graduating class in BU's College of Arts and Sciences.

**Dean's List (7 semesters)** Sep 2017-May 2021  
Boston University  
Ongoing award for attaining a semester GPA of 3.5 or better.

**Cardinal Medeiros Scholarship** Sep 2017-May 2021  
Archdiocese of Boston  
Four-year full-tuition scholarship awarded each semester at Boston University. Students must demonstrate academic achievement, leadership skills, and contributions to their schools and communities.

### REFERENCES

---

**Dr. Roel Verhaak, PhD**  
Applicant's Postbaccalaureate Research Advisor  
Professor and Associate Director of Computational Biology  
Florine Deschenes Roux Chair for Genomics and Computational Biology  
The Jackson Laboratory for Genomic Medicine, Farmington, CT  
Email: [roel.verhaak@jax.org](mailto:roel.verhaak@jax.org); Phone: 207-288-6000

**Dr. Ana Fiszbein, PhD**  
Applicant's Graduate Research Advisor  
Assistant Professor, Department of Biology  
Boston University, Boston, MA  
Email: [anafisz@bu.edu](mailto:anafisz@bu.edu); Phone: 617-353-2432

**Dr. Meredith Theeman, PhD**  
Applicant's Postbaccalaureate Program Director  
Director of Predoctoral and Postdoctoral Education  
The Jackson Laboratory for Genomic Medicine, Farmington, CT  
Email: [meredith.theeman@jax.org](mailto:meredith.theeman@jax.org); Phone: 207-288-6000