

Max Aaron Beck Haase, PhD

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Personal details

Born 1994, Virginia USA
American citizenship
Married; one child

Education & Training

Dec 2023–	Postdoctoral Fellow (Mentor: Andrea Musacchio), Max Planck Institute for Molecular Physiology
2017–2023	Doctor of Philosophy (Mentor: Jef D. Boeke), Cell Biology, New York University
2017–2020	Master of Philosophy (Mentor: Jef D. Boeke), Cell Biology, New York University
2013–2017	Bachelor of Science (Mentor: Chris Todd Hittinger), Evolutionary Biology, University of Wisconsin - Madison

Employment

Dec 2023–present	Max Planck Institute for Molecular Physiology, Postdoctoral Researcher
Apr–Oct 2023	NYU Langone Health, Postdoctoral Researcher
2017–2023	NYU Langone Health, Graduate Assistant
2015–2017	University of Wisconsin - Madison, Undergraduate Worker

Research summary

My research is concerned with the biology and evolution of chromosome segregation. Current interests are focused on centromere evolution, molecular and structural biology of the kinetochore-centromere interface, and the synthetic biology of chromatin using yeast as a model system.

Publications

equal authorship = *, corresponding author = @

Selected publications

1. **Haase MAB[@]**, Lazar-Stefanita L, Baudry L, Wudzinska A, Zhou X, Rokas A, Hittinger CT, Pfander B, Musacchio A, Boeke JD[@]. *Ancient co-option of LTR retrotransposons as yeast centromeres*. *Nature* (in press, 2026)
2. **Haase MAB[@]**, Steenwyk JL, Boeke JD. *Gene loss and cis-regulatory novelty shaped core histone gene evolution in the apiculate yeast Hanseniaspora uvarum*. *Genetics*, 2024
3. **Haase MAB**, Ólafsson G*, Flores RL*, Boakye-Ansah E, Zelter A, Dickinson MS, Lazar-Stefanita L, Truong DM, Asbury CL, Davis TN, Boeke JD[@]. *DASH/Dam1 complex mutants stabilize ploidy in histone-humanized yeast by weakening kinetochore-microtubule attachments*. *EMBO Journal*, 2023

Journal Articles

22. **Haase MAB[®]**, Lazar-Stefanita L, Baudry L, Wudzinska A, Zhou X, Rokas A, Hittinger CT, Pfander B, Musacchio A, Boeke JD[®]. *Ancient co-option of LTR retrotransposons as yeast centromeres*. *Nature* (in press, 2026)
21. Santarossa CC, Li Y, Yousef S, Hasdemir HS, Rodriguez CC, **Haase MAB**, Baek M, Coudray N, Pavek JG, Focke KN, Silverberg AL, Bautista C, Yeh J, Marty M, Baker D, Tajkhorshid E, Ekiert DC[®], Bhabha G[®]. *LetA defines a structurally distinct transporter family*. *Nature* (in press, 2026)
20. Bajgain Y, Langdon QK, Krien CM, Jarzyna M, Buh KV, **Haase MAB**, Pasles A, Wolters JF, Groenewald M, Hittinger CT[®], Opulente DA[®] *Taxogenomic Analysis of a Novel Yeast Species, Lachancea rosae Sp. Nov. F.A., Isolated From the Wild Rose Rosa californica Yeast*, 2025
19. Goldberg GW[®], Kogenaru M, Keegan S*, **Haase MAB**^{*}, Kagermazova L, Onyebeke K, Arias MA, Adams S, Fenyö D, Noyes MB[®], and Boeke JD[®] *Engineered transcription-associated Cas9 targeting in eukaryotic cells*. *Nature Communications*, 2024
18. **Haase MAB**, Lazar-Stefanita L, Ólafsson G, Wudzinska A, Shen MJ, Truong DM, Boeke JD[®]. *macroH2A1 drives nucleosome dephasing and genome instability in histone humanized yeast*. *Cell Reports*, 2024
17. Opulente DA^{*}, LaBella AL^{*}, Harrison MC, Wolters JF, Liu C, Kominek J, Steenwyk JL, Stoneman HR, VanDenAvond J, Miller CR, Langdon QK, Silva M, Gonçalves C, Ubbelohde EJ, Li Y, Buh KV, Jarzyna M, **Haase MAB**, Rosa CA, Čadež N, Libkind D, DeVirgilio JH, Hulfachor AB, Kurtzman CP, Sampaio JP, Gonçalves P, Zhou X, Shen XX, Groenewald M, Rokas A[®], Hittinger CT[®]. *Genomic factors shape carbon and nitrogen metabolic niche breadth across Saccharomycotina yeasts*. *Science*, 2024
16. **Haase MAB[®]**, Steenwyk JL, Boeke JD. *Gene loss and cis-regulatory novelty shaped core histone gene evolution in the apiculate yeast Hanseniaspora uvarum*. *Genetics*, 2024
15. Ólafsson G[®], **Haase MAB**, Boeke JD[®]. *Humanization reveals pervasive incompatibility of yeast and human kinetochore components G3*: *Genes Genomes Genetics*, 2024
14. Lauer SL^{*}, Luo J^{*}, Lazar-Stefanita L, Zhang W, McCulloch LM, Fanfani V, Lobzaev E, **Haase MAB**, Easo N, Zhao Y, Yu F, Cai J, The Build-A-Genome class, Bader JS, Stracquadanio G, Boeke JD[®]. *Context-dependent neocentromere activity in synthetic yeast chromosome VIII*. *Cell Genomics*, 2023
13. Zhang W, Lazar-Stefanita L, Yamashita H, Shen MJ, Mitchell LA, Kurasawa H, Lobzaev E, Fanfani F, **Haase MAB**, Sun X, [...], Boeke JD[®]. *Manipulating the 3D organization of the largest synthetic yeast chromosome*. *Molecular Cell*, 2023
12. Opulente DA[®], Langdon QK, Jarzyna M, Buh KV, **Haase MAB**, Groenewald M, Hittinger CT[®]. *Taxogenomic analysis of a novel yeast species isolated from soil, Pichia galeolata sp. nov.* *Yeast*, 2023
11. MacRae MR^{*}, Puvanendran D^{*}, **Haase MAB**, Coudray N, Kolich L, Lam C, Baek M, Bhabha G[®], Ekiert DC[®]. *Protein-protein interactions in the Mla lipid transport system probed by computational structure prediction and deep mutational scanning*. *Journal of Biological Chemistry*, 2023
10. Lazar-Stefanita L, Luo J, **Haase MAB**, Zhang W, Boeke JD[®]. *Two differentially stable rDNA loci coexist on the same chromosome and form a single nucleolus*. *PNAS*, 2023
9. **Haase MAB**, Ólafsson G^{*}, Flores RL^{*}, Boakye-Ansah E, Zelter A, Dickinson MS, Lazar-Stefanita L, Truong DM, Asbury CL, Davis TN, Boeke JD[®]. *DASH/Dam1 complex mutants stabilize ploidy in histone-humanized yeast by weakening kinetochore-microtubule attachments*. *EMBO Journal*, 2023
8. Spurley WJ, Fisher KJ, Langdon QK, Buh KV, Jarzyna M, **Haase MAB**, Moriarty RV, Rodriguez D, Sheddan A, Wright S, Sorlie L, Hulfachor AB, Opulente DA, Hittinger CT[®]. *Substrate, temperature, and geographical patterns among nearly 2,000 natural yeast isolates*. *Yeast*, 2021
7. O'Brien CE, Oliveira-Pacheco J, Cinnéide EO, **Haase MAB**, Hittinger CT, Rogers TR, Zaragoza O, Bond U, Butler G[®]. *Population genomics of the pathogenic yeast Candida tropicalis identifies hybrid isolates in environmental samples*. *PLOS Pathogens*, 2021
6. **Haase MAB**^{*}, Kominek J^{*}, Opulente DA, Shen X, LaBella AL, Zhou X, DeVirgilio J, Hulfachor AB, Kurtzman CP, Rokas A, Hittinger CT[®]. *Repeated horizontal gene transfer of GALactose metabolism genes violates Dollo's law of irreversible loss*. *Genetics*, 2021

5. Dharampal PS, Diaz-Garcia L, **Haase MAB**, Zalapa J, Currie CR, Hittinger CT, Steffan SA[®]. *Microbial Diversity Associated with the Pollen Stores of Captive-Bred Bumble Bee Colonies*. *Insects*, 2020
4. **Haase MAB**, Truong DM, Boeke JD[®]. *Superloser: a plasmid shuffling vector for *Saccharomyces cerevisiae* with exceedingly low background*. *G3: Genes Genomes Genetics*, 2019
3. Opulente DA, Langdon QK, Buh KV, **Haase MAB**, Sylvester K, Moriarty RV, Jarzyna M, Considine SL, Schneider RM, Hittinger CT[®]. *Pathogenic budding yeast Isolated outside of clinical settings*. *FEMS Yeast Research*, 2019
2. Shen X*, Opulente DA*, Kominek J*, Zhou X*, Steenwyk J, Buh KV, **Haase MAB**, Wisecaver JH, Wang M, Doering DT, Boudouris JT, Schneider RM, Langdon QK, Ohkuma M, Endoh R, Takashima M, Manabe R, Cadez N, Libkind D, Rosa CA, DeVirgilio J, Hulfachor AB, Groenewald M, Kurtzman CP[®], Hittinger CT[®], Rokas A[®]. *Tempo and mode of genome evolution in the budding yeast subphylum*. *Cell*, 2018
1. **Haase MAB**, Kominek J, Langdon QK, Kurtzman CP, Hittinger CT[®]. *Genome sequence and physiological analysis of *Yamadazyma laniorum* f.a. sp. nov. and a reevaluation of the apocryphal xylose fermentation of its sister species, *Candida tenuis**. *FEMS Yeast Research*, 2017

Preprints & Works in Preparation

2. Lazar-Stefanita L, **Haase MAB**, Boeke JD[®]. *Humanized nucleosomes reshape replication initiation and rDNA/nucleolar integrity in yeast*. *bioRxiv*, 2023. doi.org/10.1101/2023.05.06.539710
1. De Ioannes P*, Whedon SD*, **Haase MAB**, Wang ZA, Nam E, Waterbury A, Camellato BR, Lee R, Valencia-Sánchez MI, Boeke JD, Cole PA[®], Armache KJ[®]. *Structural Basis of Cooperative COMPASS Activation by Histone Acetylation and Ubiquitination*. *Nature*, In Revision

Monographs

1. **Haase MAB**. *Direct Functional Studies of Human Chromatin Using Histone Replacement in *Saccharomyces cerevisiae**. PhD thesis, New York University. 2023

Presentations & Posters

- July. 2025 (**Oral**): International Conference on Yeast Genetics and Molecular Biology. Title: *Ancient co-option of LTR retrotransposons as yeast centromeres*.
- Oct. 2023 (**Oral**): Fragile Nucleosome – Virtual. Title: *Walk On the Wild Side: Insights into histone and point centromere evolution from the bipolar budding yeasts Hanseniaspora*.
- Oct. 2023 (**Oral**): Max Planck Institute of Molecular Physiology Seminar. Title: *Adaptability and evolutionary origins of genetic point centromeres*.
- Aug. 2023 (**Oral**): Gordon Research Conference: Epigenetics. Title: *The intermediate state of point centromere evolution*.
- Apr. 2023 (**Oral**): Institut Curie virtual seminar. Title: *Weakened kinetochore-microtubule attachments suppress high levels of chromosome instability in budding yeasts*.
- July 2022 (**Oral**): Gordon Research Seminar: Regulating Centromere Function Through Structure. Vermont, USA. Title: *Evolution of Perfect Euploidy Despite Persistent Centromere Catastrophe*.
- May 2022 (**Oral**): EMBO Workshop: Evolutionary approaches to research in chromatin. Aarhus, Denmark. Title: *Human variant histones can comprise the entirety of chromatin in yeasts*.
- Aug. 2021 (**Poster**): International Conference on Yeast Genetics and Molecular Biology (virtual). Title: *Adaptation to life with human chromatin in budding yeasts*.
- Oct. 2019 (**Poster**): Yeast Research: Origins, Insights, Breakthroughs, CSHL. New York, USA. Title: *Reverse engineering human epigenetic machinery in yeast*.
- Sept. 2019 (**Oral**): ISG nano seminar, NYU Langone Medical Center. New York, USA. Title: *Reverse engineering human epigenetic machinery in yeast*.
- June 2019 (**Poster**): Synthetic Biology: Engineering, Evolution & Design Conference. New York, USA. Title: *Engineering the Human Compass Family of Histone H3K4 Methylases in Yeast*.

- July 2018 (**Poster**): Gordon Research Conference - Chromatin Structure and Function. Maine, USA. Title: *Rapid evolution of trivalent arsenite resistance in S. cerevisiae via heterozygous diploid SCRambeling*.
- May 2017 (**Poster**): Undergraduate Symposium, University of Wisconsin – Madison, Wisconsin, USA. Title: *Genome sequence and physiological analysis of a novel yeast species*.
- May 2016 (**Poster**): Genetics Society of America, The Allied Genetics Conference, Florida, USA. Title: *Genome sequence analysis of two novel yeast species*.

Funding and Support

2025—2027	MSCA Postdoctoral Fellowship 2024 (CENSTRUk: 101206234)
2018—2020	NIH Genome Integrity Training Grant (T32GM115313)

Awards

2024	NYU University-Wide Outstanding Dissertation Award
2022	Vilcek Institute of Graduate Biomedical Sciences Travel Grant
2019	Vilcek Institute of Graduate Biomedical Sciences Travel Grant
	Special MacCracken Award
2018	NYU Dean's Student Travel Grant
	Vilcek Institute of Graduate Biomedical Sciences Travel Grant
2017	University of Wisconsin Bookstore Academic Excellence Award
2016	Hilldale Undergraduate Research Fellowship
	Laboratory of Genetics Undergraduate Award
	Genetics Society of America Undergraduate Travel Award

Students Mentored

(Masters) Maria Bahamon (2021—2023), Kristina Bunda (2025—2026)

(High School) Lohann Excoffon (2020—2022)

Professional Membership & Service

(Member:) Genetics Society of America (GSA)

(Reviewer:) Genome Research, Review Commons, Science Advances, Scientific Reports

(Organizer:) Gordon Research Seminar 2023: Epigenetics Mechanisms

References

Postdoctoral advisor	Ph.D. advisor	Undergraduate advisor
Dr. Andrea Musacchio Director, Mechanistic Cell Biology MPI of Molecular Physiology Dortmund, Germany 44227 Andrea.Musacchio@mpi-dortmund.mpg.de	Dr. Jef D. Boeke Director, Institute of System Genetics NYU Langone Health New York, NY 10016 Jef.Boeke@nyulangone.org	Dr. Chris Todd Hittinger Professor of Genetics University of Wisconsin – Madison Madison, WI 53726 cthittinger@wisc.edu