BIOGRAPHICAL SKETCH

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NAME: Shor, Erika

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

POSITION TITLE: Assistant Member

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)	END DATE MM/YYYY	FIELD OF STUDY
University of California, Berkeley	BA	05/1998	
Columbia University	PHD	02/2005	
University of Wisconsin, Madison	Postdoctoral Fellow	2009	
Princeton University	Postdoctoral Fellow	2013	

A. Personal Statement

I am an Assistant Professor at the Hackensack Meridian Health School of Medicine and an Assistant Member at the Center for Discovery and Innovation (CDI) (both located in Nutley, NJ). I have extensive expertise in fungal genome stability, stress responses, drug resistance, and pathogenicity accumulated during graduate studies in Rodney Rothstein's lab at Columbia University, postdoctoral studies with Catherine Fox (University of Wisconsin-Madison) and James Broach (Princeton University), and working as a senior research associate with David Perlin (then at the Public Health Research Institute, Rutgers University). My graduate and postdoctoral work was supported by fellowships from the National Science Foundation, the Leukemia and Lymphoma Society, and the American Cancer Society. Currently, my lab studies the opportunistic fungal pathogen *Candida glabrata*, whose incidence is on the rise and which presents a clinical problem because it rapidly develops resistance to antifungal drugs. We are particularly interested in the regulation of fungal genome stability and evolution of drug resistance by the environment, especially that of the host. Our recently published work has utilized *C. glabrata* macrophage infection and mouse gut colonization models to demonstrate that genetic instability and evolution towards antifungal resistance mutations occur in C. glabrata inhabiting these clinically relevant host niches.

Ongoing projects that I would like to highlight include:

R21 AI168729
Shor (PI)
11/09/22-10/31/25
Elucidating mediators of genetic instability in *Candida glabrata*

R21 AI190958
Shor (PI)
02/01/2025-01/31/2027
Effects of antifungal drug treatment and immune dysfunction on the evolutionary dynamics of gut-colonizing *Candida glabrata*

R01 AI109025
Perlin (PI), Role: Co-Investigator
08/01/14-07/31/28
Critical Factors Influencing Echinocandin Resistance in *Candida glabrata*

1. Hassoun Y, Aptekmann AA, Keniya MV, Gomez RY, Alayo N, Novi G, Quinteros C, Kaya F, Zimmerman M, Caceres DH, Chow NA, Perlin DS, Shor E. Evolutionary dynamics in gut-colonizing Candida glabrata during caspofungin therapy: Emergence of clinically important mutations in

sphingolipid biosynthesis. PLoS Pathog. 2024 Sep;20(9):e1012521. PubMed Central PMCID: PMC11412501.

2. Arastehfar A, Daneshnia F, Cabrera N, Penalva-Lopez S, Sarathy J, Zimmerman M, Shor E, Perlin DS. Macrophage internalization creates a multidrug-tolerant fungal persister reservoir and facilitates the emergence of drug resistance. Nat Commun. 2023 Mar 2;14(1):1183. PubMed Central PMCID: PMC9981703.
3. Shor E, Garcia-Rubio R, DeGregorio L, Perlin DS. A Noncanonical DNA Damage Checkpoint Response in a Major Fungal Pathogen. mBio. 2020 Dec 15;11(6) PubMed Central PMCID: PMC7773997.
4. Shor E, Schuyler J, Perlin DS. A Novel, Drug Resistance-Independent, Fluorescence-Based Approach To Measure Mutation Rates in Microbial Pathogens. mBio. 2019 Feb 26;10(1) PubMed Central PMCID: PMC6391916.

B. Positions, Scientific Appointments and Honors

Positions and Scientific Appointments

2022 -	Assistant Member, Center for Discovery and Innovation, Nutley, NJ
2019 -	Assistant Professor, Hackensack Meridian School of Medicine
2018 - 2022	Research Assistant Member, Center for Discovery and Innovation
2014 - 2018	Research & Grant Development, Public Health Research Institute, Rutgers University
2013 - 2014	Associate member, Princeton Institute of Life Sciences
2009 - 2013	Postdoctoral fellow, Princeton University
2005 - 2009	Postdoctoral fellow, University of Wisconsin, Madison

Honors

2010 - 2012	Cancer Training Grant, National Institutes of Health
2006 - 2010	Postdoctoral Fellowship, Leukemia & Lymphoma Society
1999 - 2002	Graduate Fellowship, National Science Foundation
2012	Postdoctoral fellowship, American Cancer Society
1998	Outstanding undergraduate geneticist, University of California, Berkeley
1998	B.A. with honors, University of California, Berkeley

C. Contribution to Science

1. As a faculty member at the Center for Discovery and Innovation and Hackensack Meridian Health School of Medical Sciences, I have led several studies of the mechanisms regulating genetic stability and evolution of antifungal drug resistance in the opportunistic fungal pathogen Candida glabrata, with a focus on resistance to the echinocandins, a frontline antifungal drug class.
   a. Gonzalez-Jimenez I, Keniya MV, Aptekmann AA, Quinteros C, Wilkerson A, Arastehfar A, Daneshnia F, Perlin DS, Shor E. Expression of 1,3-β-glucan synthase subunits in Candida glabrata is regulated by the cell cycle and growth conditions and at both transcriptional and post-transcriptional levels. Antimicrob Agents Chemother. 2025 Jun 17; PubMed PMID: 40525410.
   b. Hassoun Y, Aptekmann AA, Keniya MV, Gomez RY, Alayo N, Novi G, Quinteros C, Kaya F, Zimmerman M, Caceres DH, Chow NA, Perlin DS, Shor E. Evolutionary dynamics in gut-colonizing Candida glabrata during caspofungin therapy: Emergence of clinically important mutations in sphingolipid biosynthesis. PLoS Pathog. 2024 Sep;20(9):e1012521. PubMed Central PMCID: PMC11412501.
   c. Arastehfar A, Daneshnia F, Cabrera N, Penalva-Lopez S, Sarathy J, Zimmerman M, Shor E, Perlin DS. Macrophage internalization creates a multidrug-tolerant fungal persister reservoir and facilitates the emergence of drug resistance. Nat Commun. 2023 Mar 2;14(1):1183. PubMed Central PMCID: PMC9981703.

d. Shor E, Garcia-Rubio R, DeGregorio L, Perlin DS. A Noncanonical DNA Damage Checkpoint Response in a Major Fungal Pathogen. mBio. 2020 Dec 15;11(6) PubMed Central PMCID: PMC7773997.

2. As a senior research associate in the Perlin lab at PHRI-Rutgers University, I worked on elucidating the drivers of genetic instability and emergence of antifungal drug resistance in the opportunistic fungal pathogen Candida glabrata. To help study the determinants of mutagenesis in this organism, including drug-resistant clinical isolates, I developed and validated a novel, fluorescence-based mutation rate reporter.
   a. Shor E, Schuyler J, Perlin DS. A Novel, Drug Resistance-Independent, Fluorescence-Based Approach To Measure Mutation Rates in Microbial Pathogens. mBio. 2019 Feb 26;10(1) PubMed Central PMCID: PMC6391916.
   b. Healey KR, Jimenez Ortigosa C, Shor E, Perlin DS. Genetic Drivers of Multidrug Resistance in Candida glabrata. Front Microbiol. 2016;7:1995. PubMed Central PMCID: PMC5156712.
   c. Perlin DS, Shor E, Zhao Y. Update on Antifungal Drug Resistance. Curr Clin Microbiol Rep. 2015 Jun 1;2(2):84-95. PubMed Central PMCID: PMC4479306.
   d. Shor E, Perlin DS. Coping with stress and the emergence of multidrug resistance in fungi. PLoS Pathog. 2015 Mar;11(3):e1004668. PubMed Central PMCID: PMC4366371.
3. My postdoctoral work in the Broach lab at Princeton University has resulted in the discovery that two budding yeast transcriptional regulators of the general environmental stress response are also involved in modulating genetic mutation. This is the first genetic demonstration of 'stress-induced mutation' in a eukaryote.
   a. Shor E, Fox CA, Broach JR. The yeast environmental stress response regulates mutagenesis induced by proteotoxic stress. PLoS Genet. 2013;9(8):e1003680. PubMed Central PMCID: PMC3731204.
4. As a postdoctoral fellow in the Fox lab at the University of Wisconsin, Madison, I helped define the relationship between origins of DNA replication and nearby transcriptional/chromatin determinants.
   a. Hoggard TA, Chang F, Perry KR, Subramanian S, Kenworthy J, Chueng J, Shor E, Hyland EM, Boeke JD, Weinreich M, Fox CA. Yeast heterochromatin regulators Sir2 and Sir3 act directly at euchromatic DNA replication origins. PLoS Genet. 2018 May;14(5):e1007418. PubMed Central PMCID: PMC5991416.
   b. Hoggard T, Shor E, Müller CA, Nieduszynski CA, Fox CA. A Link between ORC-origin binding mechanisms and origin activation time revealed in budding yeast. PLoS Genet. 2013;9(9):e1003798. PubMed Central PMCID: PMC3772097.
   c. Müller P, Park S, Shor E, Huebert DJ, Warren CL, Ansari AZ, Weinreich M, Eaton ML, MacAlpine DM, Fox CA. The conserved bromo-adjacent homology domain of yeast Orc1 functions in the selection of DNA replication origins within chromatin. Genes Dev. 2010 Jul 1;24(13):1418-33. PubMed Central PMCID: PMC2895200.
   d. Shor E, Warren CL, Tietjen J, Hou Z, Müller U, Alborelli I, Gohard FH, Yemm AI, Borisov L, Broach JR, Weinreich M, Nieduszynski CA, Ansari AZ, Fox CA. The origin recognition complex interacts with a subset of metabolic genes tightly linked to origins of replication. PLoS Genet. 2009 Dec;5(12):e1000755. PubMed Central PMCID: PMC2778871.
5. As a graduate student in the Rothstein lab at Columbia University, I discovered genetic evidence linking the Sgs1-Top3 complex to the homologous recombination pathway. I also identified several new genes involved in homologous recombination in yeast. Homologs of these genes were later discovered in higher eukaryotes, including humans, and shown to play important roles in modulating the activity of homologous recombination enzymes.
   a. Bernstein KA, Shor E, Sunjevaric I, Fumasoni M, Burgess RC, Foiani M, Branzei D, Rothstein R. Sgs1 function in the repair of DNA replication intermediates is separable from its role in homologous recombinational repair. EMBO J. 2009 Apr 8;28(7):915-25. PubMed Central PMCID: PMC2670856.
   b. Shor E, Weinstein J, Rothstein R. A genetic screen for top3 suppressors in Saccharomyces cerevisiae identifies SHU1, SHU2, PSY3 and CSM2: four genes involved in error-free DNA repair. Genetics. 2005 Mar;169(3):1275-89. PubMed Central PMCID: PMC1449555.

c. Shor E, Gangloff S, Wagner M, Weinstein J, Price G, Rothstein R. Mutations in homologous recombination genes rescue top3 slow growth in Saccharomyces cerevisiae. Genetics. 2002 Oct;162(2):647-62. PubMed Central PMCID: PMC1462310.

Complete List of Published Work in My Bibliography:
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