OMB No. 3145-0279 (Expiration Date 10/31/2026)

NIH BIOGRAPHICAL SKETCH COMMON FORM

Name: Perlin, David

Persistent Identifier (PID) of the Senior/Key Person: https://orcid.org/0000-0002-1268-5524

Position Title: Chief Scientific Officer

Organization and Location: Hackensack Meridian Health Center for Discovery and Innovation, Nutley, New Jersey, United States

PROFESSIONAL PREPARATION

INSTITUTION AND LOCATION	DEGREE	Start Date	Completion Date	FIELD OF STUDY
University of Rochester School of Medicine and Dentistry, Rochester, New York, United States	Postdoctoral Fellow	10/1983	10/1985	Biochemistry
Yale University School of Medicine, New Haven, Connecticut, United States	Postdoctoral Fellow	10/1980	10/1983	Biochemistry, Genetics
Cornell University , Ithaca, New York, United States	Doctor of Philosophy (PHD)	09/1976	10/1980	Plant Physiology
Brandeis University , Waltham, Massachusetts, United States	Bachelor of Arts (AB)	08/1972	08/1976	Biology

Appointments and Positions

2019 - present	Chief Scientific Officer, Hackensack Meridian Health Center for Discovery and Innovation, Nutley, New Jersey, United States
2022 - present	Deputy Director Consortium Integration and Strategic Initiatives for Research, Lombardi Comprehensive Cancer Center Consortium, Washington D.C. , District of Columbia, United States
2019 - present	Professor, Dept. of Microbiology & Immunology, Georgetown Univ Sch. of Med, Washington D.C. , District of Columbia, United States
2019 - present	Professor, Dept. of Medical Sciences, Hackensack Meridian School of Medicine, Nutley, New Jersey, United States
2009 - 2018	Director, Rutgers Regional Biocontainment Laboratory, Newark, New Jersey, United States
2006 - 2018	Executive Director, Public Health Research Institute, NJ Med Sch-UMDNJ, Newark, New Jersey, United States
2005 - 2006	President, Public Health Research Institute, Newark, New Jersey, United States
2002 - 2018	Professor, Department of Microbiology, Biochemistry and Molecular Genetics, New Jersey Medical School, Rutgers Biomedical and Health Sciences, Newark, New Jersey, United States
1992 - 2002	Adjunct Associate Professor, New York University School of Medicine, New York, New York, United States
1989 - 1991	Associate Member, Public Health Research Institute, New York, New York, United States
1985 - 1998	Assistant Member, Public Health Research Institute, New York, New York, United States

Products

Products Closely Related to the Proposed Project

1. Shor E, Perlin DS, Kontoyiannis DP. Tolerance and heteroresistance to echinocandins in Candida auris: conceptual issues, clinical implications, and outstanding questions. mSphere. 2025 May 27;10(5):e0016125. PubMed Central PMCID: PMC12108057.
2. 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.
3. Arastehfar A, Daneshnia F, Hovhannisyan H, Fuentes D, Cabrera N, Quinteros C, Ilkit M, Ünal N, Hilmioğlu-Polat S, Jabeen K, Zaka S, Desai JV, Lass-Flörl C, Shor E, Gabaldon T, Perlin DS. Overlooked Candida glabrata petites are echinocandin tolerant, induce host inflammatory responses, and display poor in vivo fitness. mBio. 2023 Oct 31;14(5):e0118023. PubMed

Central PMCID: PMC10653939.

4. Garcia-Rubio R, Jimenez-Ortigosa C, DeGregorio L, Quinteros C, Shor E, Perlin DS. Multifactorial Role of Mitochondria in Echinocandin Tolerance Revealed by Transcriptome Analysis of Drug-Tolerant Cells. mBio. 2021 Aug 31;12(4):e0195921. PubMed Central PMCID: PMC8406274.
5. 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.

Other Significant Products Highlighting Contributions to Science

1. Satish S, Jiménez-Ortigosa C, Zhao Y, Lee MH, Dolgov E, Krüger T, Park S, Denning DW, Kniemeyer O, Brakhage AA, Perlin DS. Stress-Induced Changes in the Lipid Microenvironment of β-(1,3)-d-Glucan Synthase Cause Clinically Important Echinocandin Resistance in Aspergillus fumigatus. mBio. 2019 Jun 4;10(3) PubMed Central PMCID: PMC6550521.
2. Alvarez N, Adam GC, Howe JA, Sharma V, Zimmerman MD, Dolgov E, Rasheed R, Nizar F, Sahay K, Nelson AM, Park S, Zhou X, Burlein C, Fay JF, Iwamoto DV, Bahnck-Teets CM, Getty KL, Lin Goh S, Salhab I, Smith K, Boyce CW, Cabalu TD, Murgolo N, Fox NG, Mayhood TW, Shurtleff VW, Layton ME, Parish CA, McCauley JA, Olsen DB, Perlin DS. Novel Pan-Coronavirus 3CL Protease Inhibitor MK-7845: Biological and Pharmacological Profiling. Viruses. 2024 Jul 18;16(7) PubMed Central PMCID: PMC11281459.
3. Arastehfar A, Daneshnia F, Hovhannisyan H, Cabrera N, Ilkit M, Desai JV, Gabaldón T, Shor E, Perlin DS. A multidimensional assessment of in-host fitness costs of drug resistance in the opportunistic fungal pathogen Candida glabrata. FEMS Yeast Res. 2024 Jan 9;24 PubMed Central PMCID: PMC11631428.
4. Garcia-Rubio R, Hernandez RY, Clear A, Healey KR, Shor E, Perlin DS. Critical Assessment of Cell Wall Integrity Factors Contributing to in vivo Echinocandin Tolerance and Resistance in Candida glabrata. Front Microbiol. 2021;12:702779. PubMed Central PMCID: PMC8298035.
5. Meyer C, Garzia A, Miller MW, Huggins DJ, Myers RW, Hoffmann HH, Ashbrook AW, Jannath SY, Liverton N, Kargman S, Zimmerman M, Nelson AM, Sharma V, Dolgov E, Cangialosi J, Penalva-Lopez S, Alvarez N, Chang CW, Oswal N, Gonzalez I, Rasheed R, Goldgirsh K, Davis JA, Ramos-Espiritu L, Menezes MR, Larson C, Nitsche J, Ganichkin O, Alwaseem H, Molina H, Steinbacher S, Glickman JF, Perlin DS, Rice CM, Meinke PT, Tuschl T. Small-molecule inhibition of SARS-CoV-2 NSP14 RNA cap methyltransferase. Nature. 2025 Jan;637(8048):1178-1185. PubMed PMID: 39663451.

Certification:

I certify that the information provided is current, accurate, and complete. This includes, but is not limited to, information related to current, pending, and other support (both foreign and domestic) as defined in 42 U.S.C. § 6605.

In accordance with Section 10632 of the CHIPS and Science Act of 2022 (42 U.S.C. § 19232), each individual identified as a senior/key person must certify that they are not a party to a malign foreign talent recruitment program.

Research Security Training Requirement for Federal Award Personnel: In accordance with Section 10634 of the CHIPS and Science Act of 2022 (42 U.S.C. § 19234), each individual identified as a senior/key person must certify that they have completed the requisite research security training that meets the requirements specified in Item 2 of Important Notice No. 149 within 12 months prior to proposal submission.

Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§287, 1001, 1031 and 31 U.S.C. §§3729-3733 and 3802.

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NIH BIOGRAPHICAL SKETCH SUPPLEMENT

Name: Perlin, David

Persistent Identifier (PID) of the Senior/Key Person: https://orcid.org/0000-0002-1268-5524

Position Title: Chief Scientific Officer

Organization and Location: Hackensack Meridian Health Center for Discovery and Innovation, Nutley, New Jersey, United States

Personal Statement

I am well qualified to advise this program. I am a Professor of Microbiology and Immunology and have worked over the past 30+ years to advance novel approaches to overcome high-threat pathogens. In my career, I have led numerous discovery programs as a Principal Investigator (PI) for major government (NIH, DOD, CDC), foundation (Gates), and commercial (Pharma and biotech) grants/contracts for drug discovery programs including my current role leading two NIH Centers of Excellence in Translational Research. I have studied molecular mechanisms responsible for tolerance and drug resistance in bacteria and fungi, and I have helped develop novel therapeutics and diagnostics against high-threat fungi. For the past 20 years, we have contributed significantly to the current understanding of tolerance and resistance mechanisms associated with echinocandin, azole and polyene class antifungal drugs. Of my more than 360 publications, >160 address drug toelrance and resistance. As editor-in-chief for the Journal of Fungi, one of the fastest growing journals in the field, I am very much focused on advancing our understanding of fungal infections.

In addition to my work to bettre understand refractory drug responses in patients, I have led five highly successful national drug accelerator programs sponsored by the NIH and/or DoD, which involved partnerships with industry. My work has focused on advancing novel anti-infective strategies, including the development of therapeutics for high-threat viral, bacterial, and fungal pathogens. Notably, I serve as co-PI with Nobel Laureate Dr. Charles Rice (Rockefeller University) for an NIH/NIAID AntiViral Drug Discovery (AViDD) program. I also lead two other NIH/NIAID supported drug accelerators supported by the NIH Centers of Excellence in Translational Research (CETR), which are focused on developing new drug candidates to overcome infections due to antibiotic and antifungal drug resistance.

Honors

2025	Fellow, Infectious Diseases Society of America
2025	ROI Power Influencer 2025, Healthcare, Hackensack Meridian Health Center for Discovery and Innovation
2024	Top 25 National Innovator, Modern Healthcare
2023	Dr. Sol J. Barer Award for Vision, Innovation and Leadership
2022	Notable Health Care Leader, Crain's New York Business
2021	Top 25 National Innovator, Modern Healthcare
2021	Healthcare Hero award for COVID-19 response, NJBIZ
2020 - 2021	Top Scientist in New Jersey, EJI Excellence in Medicine Award
2019 - 2020	Top 10 Health Care Influencer in New Jersey, RO1-NJ
2018	Fellow, American Academy of Microbiology
2017	Inaugural Editor-in-Chief, Journal of Fungi
2017 - 2021	Chair, Audit Committee, American Society for Microbiology (ASM)
2012	Executive Committee, Board of Directors, Aaron Diamond AIDS Research Center
2009 - 2012	Distinguished Visiting Professor, University of Manchester, United Kingdom
2005	Fellow, The New York Academy of Sciences

Contributions to Science

1. Multidrug resistance continues to plague both global and U.S. healthcare systems, and with few new antibiotics emerging from an increasingly diminished development pipeline, there remains a critical unmet need for novel therapeutics to treat drug-resistant infections. My laboratory has been deeply engaged in the discovery of new therapeutic targets and innovative chemical scaffolds directed against high-threat fungal and bacterial pathogens. We are developing both narrow- and broad-spectrum agents targeting multidrug-resistant bacterial and fungal pathogens commonly associated with life-threatening systemic infections in immunocompromised patients. I currently lead two NIH-designated Center of Excellence in Translational Research (CETR) programs and an Antiviral Drug Discovery (AViDD) Accelerator focused on advancing a new generation of therapeutics against high-threat bacteria, fungi, and viruses. These programs function as collaborative public-private partnerships that accelerate the discovery and development of novel antibiotics, antifungals, and antivirals by bringing together academic investigators, industry partners, and critical core resources. Through these integrated efforts, we aim to advance highly promising early-stage molecules into therapeutic candidates suitable for clinical evaluation. These programs have been highly productive in developing next generation therapeutic solutions, some in clinical development.

2. My group has had a longstanding focus on understanding the molecular, genetic, and pharmacologic mechanisms underlying resistance and tolerance in medically important fungi. In 2005, my laboratory was the first to identify the molecular basis of clinical resistance to the echinocandin class of antifungal drugs, a landmark discovery that transformed our understanding of antifungal treatment failure. We also contributed foundational studies of azole resistance mechanisms in Aspergillus. My group has published more than 170 peer-reviewed papers and reviews defining the relationships among resistance mutations, fungal genetics, enzyme inhibition, MICs, pharmacodynamics, virulence, and clinical outcomes. My lab also served as a Global Clinical Reference Center for Pfizer and later Astellas Pharma, where we conducted molecular analyses of echinocandin-resistant fungal isolates recovered from patients failing therapy. Through these efforts, we helped establish important links between resistance mechanisms, strain lineage, pathogen fitness, and therapeutic response. More recently, my group has focused on the genetic, cellular, and host factors that drive antifungal drug tolerance and promote the emergence of multidrug resistance in high-threat fungal pathogens, including Candida auris, Candida glabrata, and other Candida species, as well as Aspergillus species. These studies continue to shape current understanding of fungal adaptation and persistence while informing the development of next-generation antifungal therapeutics and diagnostics.

3. Rapid detection of respiratory, GI tract and bloodstream infections, and associated resistance markers. Early and appropriate antimicrobial therapy is critical to a favorable outcome for patients with respiratory and BSIs. Current diagnostic methods are inadequate and reducing the time from specimen collection to species identification and antimicrobial susceptibility is essential for improving patient outcome. For the past decade and one-half, my group has been involved in developing next-generation nucleic acid PCR- and RNA-based molecular beacon platforms for rapid identification of viral, bacterial and fungal pathogens, and associated drug resistance in high threat bacterial, viral and fungal pathogens.

4. Improving existing drug therapy. A key factor for successful therapy is whether a drug get to the site of infection at the desired level for efficacy. My research group has been using novel technology to image and quantify the level of drugs in life-threatening diseases resulting from intra-abdominal abscesses and pulmonary lesions. This work provides insights into more effective therapy by increasing exposure levels and reducing the emergence of drug resistance resulting from suboptimal dosing. In addition to drug access, drug response is often limited factors such as an individual's metabolism, which effect whether a drug is present at the desired concentration over the course of therapy. Classically, therapeutic drug monitoring (TDM) has been used to assess drug levels in patients. This is often a laboratory-intensive process that can take several days. We have developed novel technology to rapidly assess drug levels of first-line antimicrobial agents in blood in real-time at the bedside.

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