

CURRICULUM VITAE

STANLEY M. SPINOLA, M.D.

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EDUCATION:

UNDERGRADUATE

Brown University <i>magna cum laude</i>	B.A.	1974
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GRADUATE

Georgetown University <i>cum laude</i>	M.D.	1978
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POSTDOCTORAL

University of North Carolina, Chapel Hill Internship and Residency in Internal Medicine and Pediatrics		1978-1982
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University of North Carolina, Chapel Hill Adult and Pediatric Infectious Diseases Trained in the laboratory of Dr. Janne Cannon, Department of Microbiology and Immunology		1984-1987
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APPOINTMENTS:

ACADEMIC

Institution	Rank/Title	Inclusive Dates
Departments of Medicine and Microbiology and Immunology State University of New York at Buffalo	Assistant Professor	1987-1993
Department of Medicine and Microbiology and Immunology State University of New York at Buffalo	Associate Professor	1993
Departments of Medicine, Microbiology and Immunology, Pathology and Laboratory Medicine Indiana University	Associate Professor	1993
Department of Microbiology and Immunology State University of New York at Buffalo	Adjunct Associate Professor	1993-1995
Indiana University Division of Infectious Diseases	Director	1995-2010
Indiana University Department of Medicine, Microbiology and Immunology, Pathology and Laboratory Medicine	Professor	1997

Indiana University Division of Infectious Diseases	David H. Jacobs Professor of Infectious Diseases	1998-2010
Department of Microbiology and Immunology Indiana University School of Medicine (IUSM)	Chair	2010– present

NON-ACADEMIC

Hospital and Other Appointments:

Institution	Title	Inclusive Dates
National Health Service Corps Boone Trail Medical Center Mamers, North Carolina	US Public Health Service Commissioned Officer Medical Director	1982-1984 1983-1984
Erie County Medical Center Buffalo, New York		1987-1993
Eskenazi Health		1993-2015
Roudebush VA Medical Center		1993-2016
Indiana University Medical Center Indiana University Health		1993-present
IUSCC Institutional Advisory Board		2016-present

Professional Consultantships:

Bellflower Clinic for Sexually Transmitted Diseases		1993-2015
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LICENSURE, CERTIFICATION, SPECIALTY BOARD STATUS

Specialty Board Status:

American Board of Internal Medicine	September 15, 1982
American Board of Pediatrics	November 16, 1983
American Board of Internal Medicine subspecialty board in Infectious Diseases	November 1, 1988

Licensure and Certification:

State of North Carolina	1982-88
State of New York	1987-93
State of Indiana	1993-present

PROFESSIONAL ORGANIZATION MEMBERSHIPS:

Professional Societies:

- American Society for Clinical Investigation
- American Academy of Microbiology
- American Sexually Transmitted Diseases Association
- American Society for Microbiology
- Indiana Branch, American Society for Microbiology
- Infectious Diseases Society of America

Infectious Diseases Society of Indiana
Association of Medical Schools Microbiology and Immunology Chairs

PROFESSIONAL HONORS AND AWARDS:

Brown University - Elected to Phi Beta Kappa, 1974; Sigma Xi, 1974; Honors in Biology, 1974

Georgetown University - Elected to Alpha Omega Alpha, 1977; Received academic performance awards in Microbiology and Pharmacology, 1978; Recipient of Sandoz Award for research in Pharmacology, 1978

Recipient of PHS citation -1983 and USPHS Commissioned Officer Award -1983

Elected to Fellowship, Infectious Diseases Society of America - 1994

Elected to American Society for Clinical Investigation -1997

Case Western Reserve University - Recipient, Pfizer Visiting Professorship in Infectious Diseases - 1999/2000

Elected to Fellowship, American Academy of Microbiology – 2009

TEACHING

Award Name	Granted By	Date Awarded
Trustees Teaching Award	Indiana University	2007

TEACHING:

TEACHING ASSIGNMENTS: (past 3 years only)

GRADUATE

J829 Current Topics in Microorganisms

Led 1 seminar / discussion “Current approaches for antimicrobial drug discovery” (2 hours), 10/7/16

Medical School Courses:

J602 Medical Microbiology

3 Lectures on Streptococci and Staphylococci (138 students), March 2015, February 2016

Participant in 2 Systems Discussions (138 students) 2/3/16, 3/2/16

Participant in 2 Team Based Learning Sessions (69 students each) 4/5/16, 4/7/16

MEDX-650 Host Defense

2 Lectures on Streptococci and Staphylococci (138 students), February 2017

1 small group session (16 students) March 22, 2017 HIV; 5 large group sessions (138 students), March 27 – April 1: GI, Respiratory, skin and soft tissue, CNS and sexually transmitted infections

MEDX-650 Host Defense

2 Lectures on Streptococci and Staphylococci (138 students), February 2018

March 22 – 23, 2 large group sessions (138 students), respiratory, skin and soft tissue, CNS and sexually transmitted infections

POSTGRADUATE

VA Infectious Disease Consult Service, 3/01/16-03/15/16 (supervised 1 fellow)

VA Infectious Disease Consult Service, 11/01/16-11/15/16 (no trainees)
 VA Infectious Disease Consult Service, 02/13/17-02/26/17 (no trainees)

Postgraduate Medical Education
 ID Fellows STD Course

H. ducreyi: chancroid and cutaneous ulcers in children, 8/27/15 (lecture to 5 fellows)

MENTORING:

Award Name	Granted By	Date Awarded
Basic Science Excellence in Faculty Mentoring Award	Indiana University	2017
Individual	Role	Inclusive Dates
Yousef Abu Kwaik, PhD SUNY-Buffalo	Thesis Advisor	1987-1990
Anthony Castellazzo, MS SUNY-Buffalo	Thesis Advisor	1989-1991
Renier Brentjens, MD/PhD SUNY-Buffalo	Thesis Advisor	1991-1996
Tom Hiltke, PhD Indiana University	Thesis Advisor	1992-1997
Robert Throm, PhD Indiana University	Thesis Advisor	1997-2001
Andrew Faber, MS Indiana University	Thesis Advisor	2002-2004
Concerta Holley, PhD, Indiana University	Thesis Advisor	2011-2015
Kristy Mount, PhD Indiana University	Member, Thesis Committee	2006-2010
Michael Trombley, PhD Indiana University	Member, Thesis Committee	2011-2015
Anna Justis Indiana University	Member, Advisory Committee Member, Thesis Committee	2014-2016 2016-2018
Matthew Murmatsu, PhD Indiana University	Member, Thesis Committee	2014-2017
Jennifer Martynowicz Indiana University	Member, Advisory Committee Member, Thesis Committee	2016-2017 2017-present
Ryan Doster, M.D. Vanderbilt University	ID Fellowship Mentoring Committee	2014-2017

Postdoctoral Fellows

Katy Palmer, PhD	Mentor	1995-1997
Margaret Bauer, PhD	Mentor	1996-2000
Alice Thornton, MD	Mentor	1995-1998
Jaffar Al-Tawfiq, MBBS	Mentor	1996-1999
Royden Young, MD	Mentor	1998-2001
Cliffon Bong, MD	Mentor	2000-2002
Tricia Humphreys, PhD	Mentor	2000-2006
Diane Janowicz MD	Mentor	2003-2007
Keith Banks MD	Mentor	2005-2008
Julia Williams van Rensburg PhD	Mentor	2013-2015
Dharanesh Gangaiah PhD	Mentor	2011-2016
Lana Dbeibo MD	Mentor	2015-2017
Brad Griesenauer PhD	Mentor	2018-

Faculty

Wei Lei, Ph.D.,	Mentor	2007-2013
Diane Janowicz M.D.	Mentor	2007-2012
Teresa Batteiger, MD	Chair, Mentoring Committee	2017- present
Stephen Jordan, MD PhD	Member, Mentoring Committee	2017- present

Short Term Trainees

Brian Robinson, MD, Howard University Medical School T35/Summer Research Program in STD, 1998 and 1999

Lizette Solis, Rice University, IUPUI T35 Summer Research Opportunities Program, 2002

William Smith, Princeton University, IUPUI T35 Summer Research Opportunities Program, 2002

Nancy Scott, Howard University Medical School T35/Summer Research Program in STD, 2002 and 2003

Michael Tounsel, IUPUI T35 Summer Research Opportunities Program, 2005

Daniel Carnegie, Howard University Medical School T35/Summer Research Program in STD, 2005

Ryan Doster MS1, IU Student Research Program in Academic Medicine, 2006

Bryce Milligan MS4, 93MD710 ID Research Elective, Fall 2006

Frank Evans, Howard University Medical School T35/Summer Research Program in STD, 2007

Palka Patel MS1, IU Student Research Program in Academic Medicine, 2007

Pierre Etienne, Howard University Medical School T35/Summer Research Program in STD, 2008

Ekene Onwuka, Howard University Medical School T35/Summer Research Program in STD, 2009

Lindsey Peters MS1, IU Student Research Program in Academic Medicine, 2009

Andrew Krieger MS1, IU Student Research Program in Academic Medicine, 2010

Nnenna Ezelio MS1, IU Student Research Program in Academic Medicine, 2011

Susan Keen MS1, IU Student Research Program in Academic Medicine, 2013

Robert Bednarik MS3, 93MD710 ID Research Elective, January 2014

Samuel Arregui, IU Bloomington undergraduate student, 2014

Yiran Jiang MS1, IU Student Research Program in Academic Medicine, 2015

Grant Jacob MS1, IU Student Research Program in Academic Medicine, 2016

Cynthia Agawneh Abam, IU Student Research Program in Academic Medicine, 2017

Physician Mentor (for a medical student cohort)

Reid Wilson, Sen Xiong, Ajlal Zaidi (2017-2021)

SERVICE:

Distinguish between service to the University and service to your professional discipline. If a service activity spans academic levels (i.e. Department, School, Campus, University) list it once. Identify your role in leadership (i.e. member, co-chair, chair).

UNIVERSITY SERVICE:

Departmental Service:

Activity	Role	Inclusive Dates
Department of Medicine		
Division of Infectious Diseases	Director	1996-2010
Infectious Diseases Fellowship Program	Director	1996-1997
Infectious Disease Fellowship Committee	Member	1995 - present
Medicine/Pediatrics Intern Candidate Interviewer		1994-2013
Medicine/Pediatrics Resident Advisor		1995-2011
Department of Microbiology and Immunology		
Chair		2010 - present
Faculty Recruitment Committee	Member	1999 - present
IU School of Medicine		
MD/PhD Program	Interviewer	2006 to present
IU Biomedical Gateway Program	Interviewer	2009 to present
Scientific Advisory Council	Member	2009-2017
Executive Committee for the Center for Immunobiology	Member	2004-2014
Basic Science Council	Member	2010-present
Basic Science Council	Chair	2014-2015
Task Force to review Centers	Member	2011
Transforming Research Initiative Committee	Member	2012

Education Allocation Committee	Member	2013
Advisory Committee for ID Lab CTSI Core Facility	Member	2013-present
Search committee for the EAD of Research Affairs	Co-Chair	2015
CQI improvement team for LCME standard 4	Co-Captain	2016-2017
Research Core Centralization Initiative Working Group	Member	2016-present
Physician Scientist Initiative Committee	Member	2016-2018

UNIVERSITY

Activity	Role	Inclusive Dates
Leadership Gift Committee, <i>Arthur C. White Annual Lectureship in Infectious Diseases</i>		1999
Leadership Gift Committee, <i>Arthur C. White Fellowship in Infectious Disease</i>		2001
Leadership Gift Committee, <i>George A. Sarosi Lectureship in Medical Education</i>		2008
External Advisory Board – Mid-America Adolescent Sexually Transmitted Diseases Cooperative Research Center, DP Orr, PI.	Member	2000-04
Indiana University Collaborative Research Grants Program	Ad hoc Reviewer	2011
Pew Scholars Program	Ad hoc Reviewer	2018
Collaboration in Translational Research Pilot Grant Review	Ad hoc Reviewer	2018

PROFESSIONAL SERVICE:

LOCAL

Organization	Role	Inclusive Dates
Community Service:		
Indianapolis Tennis Championships	Volunteer	2001-2009
Downtown Tennis Center of Indianapolis, Inc.	Member, Board of Directors	2011-present
HOBY Indiana (Hugh O' Brian Youth Leadership Program)	Discussant, Butler University	2014

REGIONAL

Organization	Activity	Inclusive Dates
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NATIONAL AND INTERNATIONAL

Organization	Activity	Inclusive Dates
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Study Sections:

NIH / NIAID

Microbiology and Infectious Diseases Research Review Committee (MID)

Member, 2003-2007

Chairperson, 2007-2008

Member, 2012-2014

Chairperson, 2014-2016

Ad hoc Reviewer, Bacteriology and Mycology Study Section 1, 2/94 and 7/95

Ad hoc Reviewer, Bacteriology and Mycology Study Section 2, 10/99, 10/01

Ad hoc Reviewer, Microbial Physiology and Genetics -2 Special Study Section, 4/95

External Reviewer, VA Merit Review, 9/95; 9/98.

External Referee, Medical Research Council of Canada, 5/95
External Reviewer, The Wellcome Trust, London, UK, 3/01; 8/02; 11/02
External Reviewer, National Research Foundation, South Africa, 6/03
Ad hoc Reviewer, NIAID SEP for Institutional Research Training Grants 04/14
Ad hoc Reviewer and Chairperson, NIAID SEP Stimulating Access to Research in Residency (StARR) (R38) 04/18

Other NIH / CDC service:

External Reviewer, NIAID Topical Microbicides Program Project Reverse Site Visit, Washington, DC, 01/02

Discussant, NIAID Scientific Evidence for Condom Effectiveness for STD Prevention Workshop, 06/00.

Speaker, NIAID Workshop, Bridging the Career Gap for Underrepresented Minority Scientists, 11/04/05, Bethesda, MD: "View From a Study Section Member"

Organizer, Sexually Transmitted Infections and Topical Microbicides Cooperative Research Centers, NIAID 2nd Annual Meeting, June 28-29, 2006

Speaker, NIAID Workshop, Bridging the Career Gap for Underrepresented Minority Scientists, 10/05/07, Bethesda, MD: "View From a Study Section Member" and "How Grants Really Get Funded"

Chairperson, Safety Monitoring Committee (SMC), DMID Protocol #04-022 "Nontypeable *Haemophilus influenzae* human colonization in Healthy Young Adults", 05/06 – 07/08.

Chairperson, Safety Monitoring Committee (SMC), DMID Protocol #07-0091 "Phase I/II Single-Site, Randomized and Double-Blinded Trial to Further Characterize the HCD50, HCD90 and Transmissibility of Nontypeable *Haemophilus influenzae* in a Human Colonization Model in Healthy Adults" 03/09 – 05/11.

Member, Scientific Advisory Board, Southeastern Sexually Transmitted Infections Cooperative Research Center, 2011 to 2013

Chairperson, Safety Monitoring Committee (SMC) DMID Protocol #09-0106, "Experimental Human Infection with Isogenic Mutants of *Neisseria gonorrhoeae*" 2012 to present.

Speaker, NIAID Workshop, Bridging the Career Gap for Underrepresented Minority Scientists, 11/08/13, Bethesda, MD: "Success from a grantee's perspective"

Participant, NIAID T32 Program Directors Meeting, 12/11-12/14, Bethesda, MD

Chairperson, DSMB, DMID Protocol 15-0091 "An Open-Label, Randomized, Multi-Center Study to Evaluate the Efficacy and Safety of a Single Dose of Oral Solithromycin Compared to Single-Dose Intramuscular Ceftriaxone plus Single-Dose Oral Azithromycin in the Treatment of Male and Female Patients with Uncomplicated Urogenital Gonorrhoea with or without Concomitant Chlamydia, 2016-2017

Member, Centers for Disease Control and Prevention expert panel for the GUD/chancroid sections for the STD Treatment Guidelines, 2015 and 2019

Publications Committee, Infectious Diseases Society of America

Member, 2001-2004

Chairperson, 2004-2007

Member, Editorial Boards:

Infection and Immunity, 2000-2005

WHO SDI Publication Review, 2002-present

The Journal of Infectious Diseases, 2008-2009

Ad Hoc Reviewer:

BMC Microbiology, BMC Infectious Diseases, Current Medicinal Chemistry, Diagnostic Microbiology and Infectious Disease, Emerging Infectious Diseases, Expert Review of Vaccines, FEMS Letters, Frontiers in Microbiology, Futures Microbiology, Genes, Immunologic Investigations, Infection and Immunity, Journal of Bacteriology, Journal of Clinical Microbiology, Journal of Immunology, Journal of Infectious Diseases, Journal of Investigative Dermatology, Journal of Leukocyte Biology, Journal of Pediatrics, Lancet Infectious Diseases, Microbial Pathogenesis, Microbiology, Molecular Microbiology, Pediatrics, PLOS Neglected Tropical Diseases, Sexually Transmitted Infections, Trends in Microbiology, United States Pharmacopoeia Convention, Vaccine

Member, Scientific Committee, International Congress of Sexually Transmitted Infections ISSTDR/IUSTI

Berlin, 06/01

Seattle, Washington, 07/07

Member, Task Force on Chancroid Control and Elimination, WHO Commission on Microeconomics and Public Health

External Reviewer, Board of Regents Departmental Excellence Through Faculty Excellence Program, State of Louisiana, 02/00.

External Reviewer, Thesis Committees

Department of Microbiology, University of Natal, South Africa 01/97

Department of Microbiology University of Ottawa, Canada, 03/01.

External Evaluator, Promotion and Tenure Committees:

Duke Children's Hospital & Health Center, 08/01

College of Medicine, University of Illinois at Chicago, 04/03

Purdue University, West Lafayette, Indiana, 08/04, 07/10

University of Wisconsin-Madison, Madison, IL, 06/05

Purdue University, West Lafayette, Indiana, 09/05

University of Washington, Seattle, WA (2 candidates) 04/06

Michigan State University, East Lansing, Michigan, 08/06

Virginia Commonwealth University, Richmond, Virginia, 08/06

Uniformed Services University, Bethesda, Maryland, 03/08

The University of Iowa College of Medicine, Iowa City, Iowa, 10/08

University of Washington, Seattle, WA, (2 faculty), 05/09

University of Toronto, Toronto, Canada, 04/12

University of Massachusetts Medical School, Worcester, MA, 02/13

Icahn School of Medicine at Mt. Sinai, NY, NY, 08/14

The Ohio State University, School of Public Health, 04/15

Old Dominion University, Norfolk, VA, 08/15

Visiting Professor to interact with Fellows-in-Training, 40th Annual Meeting of the IDSA, Chicago, 2002.

Member, External Advisory Board, University of Iowa, Planning Grant RCE Program (RFA: AI-02-050). 2002-2003.

Member, University of Iowa Carver College of Medicine, ad hoc Committee to review the Department of Microbiology, 05/14

External Reviewer, University of Washington, STD/AIDS T32 Training Grant 04/17

PATIENT CARE/CLINICAL SERVICE: List activities in service to patients, indicating position, clinical venue and inclusive dates. Include role in administrative, organizational and team activities that improve the environment for clinical care. If the activities extend beyond the local level, indicate the sphere or extent of impact (i.e. regional, national, international).

Clinical Service:

- Member, Infection Control Committee, Clarian Health Partners 1996-2003
- Co-Director, Clarian Infectious Disease Service, 2000-2006

GRANTS/FELLOWSHIPS

Previous:

As Principle Investigator:

NIAID NRSA A107531. "Do antibodies directed against H.8 prevent meningococemia?" 1986-1987. Sponsor: JG Cannon. Total Costs: \$30,000.

NIAID R29 AI27863-05. "Pathogenesis of *H. ducreyi* infections." 1990-1994. Direct Costs: \$350,000.

NIAID R01 AI27863-11. "Pathogenesis of *H. ducreyi* infections." 07/01/95-06/30/00. Direct Costs: \$868,750; Total Costs: \$1,296,040. No-Cost Extension: 07/01/00-05/31/01.

NIAID R01 AI27863-17 "Pathogenesis of *H. ducreyi* infections." 05/01/01 - 04/30/07 (Project Period). Direct Costs \$1,225,000. No--Cost Extension: 05/01/07-04/31/08.

NIAID R01 AI27863-21. "Pathogenesis of *H. ducreyi* infections." 09/15/10- 08/31/15. Total Costs: \$1,538,663

NIAID R01 AI27863-21S1. "Pathogenesis of *H. ducreyi* infections."
Principal Investigator: S. Spinola, 12/01/11- 08/31/15. Total Costs: \$615,150

NIAID R01 AI27863-21S2. "Pathogenesis of *H. ducreyi* infections - Research Supplements to Promote Diversity in Health-Related Research" 3/01/11- 08/31/15. Total Costs: \$144,474.

NIAID R01 AI059384-6. "Human Immune Response to *Haemophilus ducreyi* Infection."
Principal Investigator: S. Spinola, 01/01/07-12/31/13 (Project Period). Total Costs: \$1,865,762

Pfizer Inc. "Comparison of Azithromycin and Ciprofloxacin for prevention of Experimental Human Infection with *Haemophilus ducreyi*." 6/1/96-5/30/97. Direct Costs \$40,398; Total Costs, \$50,497.

NIAID U01 AI75329. Chancroid Clinical Trials Unit at Indiana University. Subcontract (University of North Carolina at Chapel Hill), 01/01/99-09/29/00. Total Yearly Cost of subcontract: \$144,273.

NIAID U19 AI31494-08. Midwest Sexually Transmitted Disease Cooperative Research Center. Project 6: "Human Immune Response to *H. ducreyi* infections." 7/1/95-6/30/99. Project 6 Leader: S. Spinola. Total Direct Costs of Project 6: \$265,209.

NIAID U19 AI31494-12. Midwest Sexually Transmitted Disease Cooperative Research Center, Program Director: S. Spinola, 09/01/99-06/30/04 (Project Period).

Core A Leader: Director, Administrative Care

Project 6: "Human Immune Response to *Haemophilus ducreyi* Infection." Project Leader: S. Spinola.

Project 6 Supplement: "Chancroid Human Challenge Unit at Indiana University." Project Leader: S. Spinola, 08/01/03-06/30/04.

NIAID U19 AI031494-18S1 "Midwest Sexually Transmitted Infections/Topical Microbicide Cooperative Research Center."

Principle Investigator: S. Spinola, 8/1/04-7/31/11 (Project Period).

Core A: Administrative Core. Director, S. Spinola

Project 6: "Chancroid Human Challenge Unit." Project Leader: S. Spinola

Total Cost of Award: \$7,856,665

NIAID T32 AI07637-05. "Training in Sexually Transmitted Diseases Including HIV," Principal Investigator: S. Spinola, 07/01/01-06/30/06 (Project Period).

NIAID T32 AI07637-10. "Training in Sexually Transmitted Diseases Including HIV."

Principal Investigator: S. Spinola, 09/01/06-08/31/11 (Project Period). Total Costs: \$929,110.

NIAID T32 AI07637-15. "Training in Sexually Transmitted Diseases Including HIV."

Principal Investigator: S. Spinola, 09/01/11-08/31/16 (Project Period). Total Costs: \$991,783.

(This grant was renewed for 5 years with K. Wools-Kaloustian as PI)

NIAID R13 AI065183-5. "Biennial Symposium on *H. ducreyi* Pathogenesis and Chancroid."

Principle Investigator: S. Spinola, 07/01/05-6/30/10 (Project Period). Total Costs: \$20,000.

NIAID R13 AI094924-01. "Biennial Symposium on *H. ducreyi* Pathogenesis and Chancroid."

Principle Investigator: S. Spinola, 07/01/11-6/30/12 (Project Period). Total Costs: \$8,000

CTSI TRAC1 PDT Pilot Grant Mechanism. "Hijacking a bacterial signal transduction system as an antimicrobial strategy."

Principal Investigator: S. Spinola, 11/01/10-10/31/11 (Project Period). Total Costs: \$21,280.

IUPUI Funding Opportunities for Research Commercialization and Economic Success (FORCES). "Astabiotics: antimicrobial signal transduction activators"

Principal Investigator: S. Spinola, 11/01/11- 6/30/14 (Project Period). Total Costs: \$25,000.

Indiana CTSI - Indiana Drug Discovery Alliance. "Antimicrobial signal transduction activators."

Principal Investigator: S. Spinola, 12/01/14-11/31/16. Total costs: \$22,000.

The goal of this pilot grant is to screen compounds from a small molecule library to find new leads that activate the CpxRA system in *Escherichia coli*

Indiana CTSI TRAC1 PDT Pilot Grant Mechanism "Antimicrobial signal transduction activators."

Principal Investigator: S. Spinola. 11/01/14-10/31/18. Total costs: \$61,938.

The goal of this pilot grant is to perform medicinal chemistry on a nitroindole that activates the CpxRA system in *Escherichia coli* and to perform preclinical testing of lead compounds in a murine urinary tract infection model

As Co-Investigator:

NIAID R01 AI24616. "Lipooligosaccharides of *H. influenzae*." 1987-1992. Principal Investigator: MA Apicella. Total Costs: \$1,079,510.

NIAID R01 AI34967. "Genetics and Biochemistry of the Haemolysin of *H. ducreyi*." Principal Investigator: RS Munson (Ohio State). Subcontract, 12/01/96-11/30/97. Total Costs of subcontract: \$26,814.

NIAID R29 AI 40263. "Immunobiology of Hemoglobin and Heme Receptor of *H. ducreyi*." Principal Investigator: C. Elkins (UNC). Subcontract, 07/01/98-6/30/99; Total Costs of subcontract: \$21,681.

NIAID R01 AI32011. "Molecular Pathogenesis of Chancroid." Principal Investigator: E. Hansen (UT Southwestern). Subcontract, 07/01/99-6/30/00. Total Costs of subcontract: \$21,681.

NIAID R01 AI38444. "Genetics and Biology of the LOS of *H. ducreyi*." Principal Investigator: RS Munson Jr. (Ohio State). Subcontract, 12/01/97-11/30/01. Total Costs of Subcontract: \$205,696.

As sponsor or primary mentor:

NIAID NRSA F32 AI09971. "Nonpilus adhesions of *Haemophilus ducreyi*." Principal Investigator: Margaret E. Bauer, 7/1/97-6/30/00

NIH/NIAID K08AI52128 "Immunobiology of Chlamydia." Principal Investigator: Raymond M. Johnson, 09/01/02-05/31/05

NIH STI-TM-CRC Developmental Award Program. "Haemophilus ducreyi Resistance to Antimicrobial Peptides." Principal investigator: Margaret E. Bauer. 1/1/06-12/31/07.

NIH/NIAID K08AI074657 "Characterization of Lipoproteins in *Haemophilus ducreyi* Pathogenesis." Principal Investigator: Diane M. Janowicz, 7/1/07-6/30/12.

NIH STI-TM-CRC Developmental Award Program. "Characterization of the cytotoxic activity of *Chlamydia trachomatis* CT166." Principal investigator: David Nelson PhD, Department of Biology, IU-Bloomington, 3/1/08-8/31/09.

Active:

Indiana CTSI - TRAC1 PDT Pilot Grant Mechanism "Determination of the Interactome between *Haemophilus ducreyi* and the Human Host"

Principal Investigator: S. Spinola, 12/01/17-10/30/19. Total costs: \$27,000.

The goal of this pilot grant is to generate a preliminary interactome between *H. ducreyi* and the human host.

NIAID R01 AI134727-01A1 "The Role of the Skin Microbiome in Cutaneous Ulcers in Children in the Tropics"

Principal Investigator: S. Spinola, 06/01/18-08/31/21. Total costs: \$1,858,428.

The goal of this grant is to determine the cause of idiopathic ulcers in children using metagenomics.

Pending:

NIAID R01AI1317116-01A1 "Determination of the Interactome between *Haemophilus ducreyi* and the Human Host"

Principal Investigator: S. Spinola, 04/01/18-03/30/23 (Project Period).

INVITED PRESENTATIONS

LOCAL (2015-2018)

Indiana University School of Medicine - South Bend, South Bend, Indiana, 6/1/15. Presentation: "Using pathogenesis to guide a novel antimicrobial strategy for resistant Gram negative bacteria."

23rd Annual Midwest Microbial Pathogenesis Conference—University of Illinois, 9/24/16. Posters: Dbeibo L, Smith SN, Van Rensburg J, Gangaiah D, Fortney KR, Gao H, Liu Y, Mobley HLT, Spinola SM. The CpxRA System in Uropathogenic *Escherichia coli* Regulates Major Virulence Genes. Abstract # 50

Grant J, Gangaiah D, Fortney KR, Mitja O, Spinola SM. Effect of Mass Drug Administration on the Persistence of *Haemophilus ducreyi* in Cutaneous Ulcers in Papua New Guinea. Abstract # 51

Indiana University School of Medicine - Department of Dermatology Grand Rounds, 9/20/17. "*Haemophilus ducreyi*: not just a STD anymore."

2018 Indiana Biology of Intracellular Pathogens Retreat, 6/28-29/18, Keynote speaker "*Haemophilus ducreyi*: not just a STD anymore."

Indiana University School of Medicine - Division of Infectious Diseases Research Conference, 9/5/18. "Hiding in plain sight: Recognition of *Haemophilus ducreyi* as a major pediatric pathogen."

Indiana University School of Medicine - Department of Microbiology and Immunology Seminar Series, 9/27/18. "Hiding in plain sight: Recognition of *Haemophilus ducreyi* as a major pediatric pathogen."

Indiana University School of Medicine - Medicine / Pediatrics Residency noon conference 10/24/18. "Pearls for success in academic Med/Peds."

Indiana University School of Medicine - T32 Training in Sexually Transmitted Diseases and Pathogens of Global Health Significance 10/24/18. "Pearls for success in an academic research career."

NATIONAL

Lectures (National):

Lecturer, 7th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th and 17th Annual Course on Principles of STD and HIV Research, July 1999, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009. Sponsored by the Center for AIDS and STD, University of Washington, Seattle, "Clinical aspects and pathogenesis of chancroid."

Johns Hopkins University School of Hygiene and Public Health – Baltimore Center for STD Research and Prevention, March 15, 2001, "*Haemophilus ducreyi* and Chancroid: A model of immunopathogenesis."

Wayne State University, Detroit, Michigan, January 15, 2002. Department of Immunology and Microbiology Seminar: "Immunopathogenesis of *Haemophilus ducreyi* infection (chancroid)."

University of Texas Southwestern, Dallas, Texas April 24, 2002. Department of Microbiology Seminar: "Immunopathogenesis of *Haemophilus ducreyi* infection (chancroid)."

University of Washington, July 25, 2002. Department of Pathobiology Research Seminar: "Pathogenesis of *Haemophilus ducreyi* infection."

Medical College of Wisconsin, Milwaukee, Wisconsin, April 8, 2003, "Infection of human volunteers with *Haemophilus ducreyi*: A model to study pathogenesis, STD-HIV interactions, and immune dysregulation."

Harvard Medical School and the Joint Program in Transfusion Medicine, Children's Hospital, Boston, MA, September 30, 2004, "Experimental Chancroid In Human Volunteers: A model to study skin-specific lymphocyte homing and host susceptibility to infection."

Purdue University, Department of Biological Sciences, 01/11/06, "Host-bacterial interactions in a human model of *Haemophilus ducreyi* infection."

University of Louisville, Louisville, KY, Department of Microbiology and Immunology, 03/01/07, "The basis for differential human susceptibility to a bacterial infection"

The Research Institute at Nationwide Children's Hospital, Columbus, OH, Center for Microbial Pathogenesis and Center for Microbial Interface Biology, 12/13/07, "The Dendritic Cell Basis for Differential Susceptibility to *Haemophilus ducreyi* Infection in Humans."

Howard University School of Medicine, Washington, DC, 2/27/08, "The dendritic cell basis for differential human susceptibility to a sexually transmitted infection." And "Careers in STD and HIV Research"

Sexually Transmitted Infections - Topical Microbicide Cooperative Research Center Annual Meeting, Chapel Hill, North Carolina, 4/14/08. Presentation: "The dendritic cell basis for differential human susceptibility to *Haemophilus ducreyi*."

Uniformed Services University of the Health Sciences, Bethesda, Maryland, Department of Microbiology and Immunology Seminar, 6/7/10. Presentation: "*Haemophilus ducreyi*: A look at life from both sides now."

Purdue University, Department of Biological Sciences, 04/13/16, "Using pathogenesis to guide antimicrobial drug discovery."

UT Southwestern School of Medicine, Department of Microbiology, 10/25/16, "Using pathogenesis to address the emergence of *Haemophilus ducreyi* as a major cause of skin ulcers in children"

University of Washington, STD/AIDS Training Grant Retreat, 4/20/17, "Career Development: Pearls for Success."

Invited Presentations at National and International Meetings:

Seventh International Pathogenic *Neisseria* Conference, Berlin, 9/11/90, (symposium): "Pathogenesis and shared surface antigens of *Haemophilus ducreyi* and *Neisseria gonorrhoeae*."

Epidemiology, pathogenesis and prevention of *Haemophilus influenzae* Disease, Veldhoven, The Netherlands, 9/24/90, (posters):

Y. Abu-Kwaik, RE McLaughlin, M.A. Apicella and S.M. Spinola. "Analysis of *H. influenzae* lipooligosaccharide oligosaccharide synthesis genes that assemble a KDO epitope."

A. Castellazzo, M. Shero, M Apicella, S.M. Spinola. "Characterization of pili by *Haemophilus ducreyi*."

First International *H. ducreyi* Symposium, Banff, Canada, 10/5/91, (posters):

S.M. Spinola, G.E. Griffiths, J.A. Bogdan and M. A. Menegus. "Identification of an 18,000-molecular weight outer membrane protein of *Haemophilus ducreyi* that contains a conserved, surface-exposed epitope."

S.M. Spinola, G.E. Griffiths and M.S. Blake. "Characterization of the major outer membrane protein of *Haemophilus ducreyi*."

"Pathogenesis and vaccine development for *Haemophilus ducreyi*." Group discussion co-chaired with Dr. Eric Hansen, University of Texas.

The 32nd ICAAC, Anaheim, California, 10/11/92; Bacterial sexually transmitted diseases: structure and immunology (symposium). "Outer membrane components and pathogenesis of *H. ducreyi*."

Tenth International Meeting of the International Society for STD Research, Helsinki, Finland, 9/93; (symposium) "Experimental human challenge with *Haemophilus ducreyi*."

Keystone Symposium on Molecular and Cellular Biology: "Sexually transmitted diseases in the HIV era," Keystone Colorado, 4/95 "*H. ducreyi* pathogenesis and human experimentation."

Third International Symposium on *Haemophilus ducreyi* Pathogenesis, held in conjunction with the Eleventh International Meeting of the International Society for STD Research, New Orleans, LA, 8/27/95. "Experimental human *H. ducreyi* infection recruits CD4+ cells to the skin."

Eleventh International Meeting of the International Society for STD Research, New Orleans, LA, Symposium on Immunobiology of STD pathogens: implications for vaccine development; 8/29/95. "Local immune responses may eradicate experimental *H. ducreyi* infection in humans."

ASM 96th General Meeting, New Orleans, LA, 5/21/96. Symposium Convener: "Back to the host: Lessons learned from experimental human infections." Presented: "Experimental human infection with *Haemophilus ducreyi*."

ASM 100th General Meeting, Los Angeles, CA, 5/24/00. Symposium Convener: "Sexually Transmitted Diseases: New Approaches to Pathogenesis." Presented: "*Haemophilus ducreyi* pathogenesis in the experimental model of human infection."

Seventh Annual Midwest Microbial Pathogenesis Conference, Columbus, Ohio, 10/28/00. "*Haemophilus ducreyi* pathogenesis in the experimental model of human infection."

Sixth International Congress of Sexually Transmitted Infections ISSTDR/IUSTI, Berlin, Germany, 6/25/01. Plenary Session: "Infection of human volunteers with *Haemophilus ducreyi*: implications for clinical disease and pathogenesis."

Sixth International Congress of Sexually Transmitted Infections ISSTD/IUSTI, Berlin, Germany, 6/25/01. Presentation: Task Force on Chancroid Control and Elimination, "Does the natural history of *H. ducreyi* infection lend itself to an elimination strategy?"

Tenth Annual Midwest Microbial Pathogenesis Conference, Iowa City, Iowa, 10/10/03. Keynote Speaker: "*Haemophilus ducreyi*: an ambassador for tolerance during inflammatory times."

ASM Conference on Pasteurellaceae 2005, Hawaii, 10/24/05. "A human model of *H. ducreyi* infection."

Ninth International Symposia on Haemophilus ducreyi Pathogenesis and Chancroid, Seattle, Washington, 7/29/07. Presentation: "The basis for differential human susceptibility to *Haemophilus ducreyi* infection."

ASM 109th General Meeting, Philadelphia, PA, 5/19/09. "Profiles of Effective and Ineffective Immune Responses to *Haemophilus ducreyi* in Humans."

Eleventh International Symposia on Haemophilus ducreyi Pathogenesis and Chancroid, Quebec City, Canada, 7/10/11. Presentation: "Using *H. ducreyi* pathogenesis to guide antimicrobial drug development for highly resistant gram negative bacteria."

25th Annual Midwest Microbial Pathogenesis Conference—University of Iowa, 9/26/18. Opening remarks - "The history of the MMPC."

Organization of National and International Meetings:

Organizer, 3rd, 4th, 5th, 6th, 7th, and 8th International Symposia on Haemophilus ducreyi Pathogenesis and Chancroid, held in conjunction with the International Society for STD Research meeting; New Orleans, Louisiana, 8/27/95; Seville, Spain, 10/19/97; Denver, Colorado, 7/11/99; Berlin, Germany 6/24/01; Ottawa, Canada 7/27/03; Amsterdam, The Netherlands, 7/10/05.

Co-organizer and Treasurer, 9th, 10th and 11th International Symposia on Haemophilus ducreyi Pathogenesis and Chancroid, held in conjunction with the International Society for STD Research meeting; Seattle, Washington 7/29/07; London, UK 6/28/09; Quebec City, Canada, 7/10/11.

Organizer, Ninth Annual Midwest Microbial Pathogenesis Meeting, held at IUPUI, Indianapolis, 9/20/02 –9/22/02. This meeting had 14 speakers, 78 poster presentations and was attended by approximately 200 students and faculty from the Midwest.

PUBLICATIONS:

Publications

Refereed Journals:

1. **Spinola SM** and Chapman KM. The proprioceptive indentation of the campaniform sensilla of cockroach legs. *J. Comp. Physiol.* 1975; 96:257-272.
2. **Spinola SM**, Lilly MP, Mahaney TM, and Raines A. The effects of phenytoin on a proprioceptor of the cockroach, *Blaberus discoidalis*: A simple method for discriminating between inhibitors of sensory transduction and axonal conduction. *J. Pharmacol. Exp. Ther.* 1979; 210:289-94.

3. **Spinola SM**, Ingram DL, Cerwin RA and Denny FW. Pyopneumothorax in a 14-year-old boy. *J. Pediatr.* 1981; 98:328-332.
4. **Spinola SM**, Bell, RA and Henderson FW. Actinomycosis: A cause of pulmonary and mediastinal mass lesions in children. *Am. J. Dis. Chil.* 1981; 135:336-339.
5. **Spinola SM** and Cannon JG. Different blocking agents cause variation in the immunologic detection of proteins transferred to nitrocellulose membranes. *J. Immun. Methods.* 1985; 81:161-165.
6. Pattishall EN, Strobe GL, **Spinola SM**, and Denny FW. Childhood Sarcoidosis. *J. Pediatr.* 1986; 108:169-177.
7. **Spinola SM**, Sheaffer CI, and Gilligan PH. Antigenuria after *Haemophilus influenzae* type b polysaccharide immunization. *J. Pediatr.* 1986; 108:247-249.
8. **Spinola SM**, Peacock J, Denny FW, Smith D, and Cannon JG. The epidemiology of nontypable *Haemophilus influenzae* colonization in children: A longitudinal study. *J. Infect. Dis.* 1986; 154:100-109.
9. **Spinola SM**, Sheaffer CI, Philbrick KB, and Gilligan PH. Antigenuria after *Haemophilus influenzae* type b polysaccharide immunization: A prospective study. *J. Pediatr.* 1986; 109:835-838.
10. Kawula TH, **Spinola SM**, Klapper DG, and Cannon JG. Localization of a conserved epitope and an azurin-like domain in the H.8 protein of pathogenic *Neisseria*. *Molecular Microbiology* 1987; 1:179-185.
11. Woods JP, **Spinola SM**, Strobel SM, and Cannon JG. Conserved lipoprotein H.8 of pathogenic *Neisseria* consists entirely of pentapeptide repeats. *Molecular Microbiology* 1989; 3:43-48.
12. Trees DL and **Spinola SM**. Localization of and immune response to the lipid modified azurin of the pathogenic *Neisseria*. *J. Infect. Dis.* 1990; 161:336-339.
13. **Spinola SM**, Abu Kwaik Y, Lesse AJ, Campagnari AA, and Apicella MA. Cloning and expression in *Escherichia coli* of a *Haemophilus influenzae* type b lipooligosaccharide synthesis gene(s) that encode a 2-Keto-3-deoxyoctulosonic acid epitope. *Infect. Immun.* 1990; 58:1558-1564.
14. Campagnari AA, **Spinola SM**, Lesse AJ, Abu Kwaik Y, Mandrell RE, and Apicella MA. Lipooligosaccharide epitopes shared among gram negative non-enteric mucosal pathogens. *Microbial Pathogenesis* 1990; 8:353-362.
15. **Spinola SM**, Castellazzo A, Shero M, and Apicella MA. Characterization of pili expressed by *Haemophilus ducreyi*. *Microbial Pathogenesis* 1990; 9:417-426.
16. Campagnari AA, Wild LM, Griffiths GE, Karalus RJ, Wirth MA, and **Spinola SM**. The role of lipooligosaccharides in experimental dermal lesions of *Haemophilus ducreyi*. *Infect. Immun.* 1991; 59:2601-2608.

17. Abu Kwaik Y, McLaughlin RE, Apicella MA, and **Spinola SM**. Analysis of *Haemophilus influenzae* type b lipooligosaccharide synthesis genes that assemble of expose a 2-keto-3-deoxyoctuloxonic acid epitope. *Molecular Microbiology* 1991; 5:2475-2480.
18. **Spinola SM**, Griffiths GE, Bogdan JA, and Menegus MA. Characterization of an 18,000 molecular weight outer membrane protein of *Haemophilus ducreyi* that contains a conserved surface-exposed epitope. *Infect. Immun.* 1992; 60:385-391.
19. Mandrell RE, McLaughlin R, Abu Kwaik Y, Lesse A, Yamasaki R, Gibson B, **Spinola SM**, and Apicella MA. Lipooligosaccharides (LOS) of some *Haemophilus* species mimic human glycosphingolipids, and some LOS are sialylated. *Infect. Immun.* 1992; 60:1322-1328.
20. McLaughlin R, **Spinola SM**, and Apicella MA. Generation of lipooligosaccharide mutants of *Haemophilus influenzae* type b. *J. Bacteriol.* 1992; 174:6455-6459.
21. Abu Kwaik Y, McLaughlin RE, Apicella M, and **Spinola SM**. Cloning and analysis of lipooligosaccharide oligosaccharide syntheses genes of *Haemophilus influenzae* type b that assemble a KDO epitope in *Escherichia coli*. *J. Infect. Dis.* 1992; 165:S195-S196.
22. Castellazzo A, Shero M, Apicella M, and **Spinola SM**. Expression of pili by *Haemophilus ducreyi*. *J. Infect. Dis.* 1992; 165:S198-S199.
23. **Spinola SM**, Griffiths GE, Shanks KL, and Blake MS. The major outer membrane protein of *Haemophilus ducreyi* is a member of the OmpA family of proteins. *Infect. Immun.* 1993; 61:1346-1351.
24. **Spinola SM**, Wild LM, Apicella MA, Gaspari AA, and Campagnari AA. Experimental human infection with *Haemophilus ducreyi*. *J. Infect. Dis.* 1994 ; 169:1146-1150.
25. Brentjens RJ, **Spinola SM**, and Campagnari AA. *Haemophilus ducreyi* adheres to human keratinocytes. *Microbial Pathogen.* 1994; 16:243-247.
26. McLaughlin R, Lee N-G, Abu Kwaik, **Spinola SM**, and Apicella MA. Characterization and sequence analysis of the *Isg* (LOS synthesis genes) locus from *Haemophilus influenzae* type b. *J. Endotoxin Res.* 1994; 1:165-174.
27. **Spinola SM**, Orazi A, Arno JN, Fortney K, Kotylo P, Chen C-Y, Campagnari AA, and Hood AF. *Haemophilus ducreyi* elicits a cutaneous infiltrate of CD4+ T cells during experimental human infection. *J. Infect. Dis.* 1996; 173:394-402.
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29. **Spinola SM**, Hiltke TJ, Fortney K, and Shanks K. The conserved 18,000 molecular weight outer membrane protein of *Haemophilus ducreyi* has homology to PAL. *Infect. Immun.* 1996; 64:1950-1955.
30. Hiltke TJ, Campagnari AA, and **Spinola SM**. Molecular and antigenic characterization of a novel lipoprotein expressed by *Haemophilus ducreyi*. *Infect. Immun.* 1996; 64:4047-4052.

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32. Chen C-Y, Mertz KJ, **Spinola SM**, and Morse SA. Comparison of enzyme immunoassays for antibodies to *Haemophilus ducreyi* in a community outbreak of chancroid in the United States. J. Infect. Dis. 1997; 175:1390-1395.
33. Thornton AC, O'Mara EM, Sorensen SJ, Hiltke TJ, Fortney K, Katz B, Shoup RE, Hood AF, and **Spinola SM**. Prevention of experimental *Haemophilus ducreyi* infection: a randomized, controlled clinical trial. J. Infect. Dis. 1998 ; 177 :1608-1613.
34. Palmer KL, Thornton AC, Fortney KR, Hood AF, Munson RS Jr., and **Spinola SM**. Evaluation of an isogenic hemolysin-deficient mutant in the human model of *Haemophilus ducreyi* infection. J. Infect. Dis. 1998 ; 178:191-199.
35. Al-Tawfiq JA, Thornton AC, Katz B, Fortney KR, Todd KD, Hood AF, and **Spinola SM**. Standardization of the experimental human model of *Haemophilus ducreyi* infection. J. Infect. Dis. 1998; 178:1684-1687.
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47. Throm RE, Al-Tawfiq JA, Fortney KR, Katz BP, Hood AF, Hansen EJ, and **Spinola SM**. Evaluation of an isogenic MOMP-deficient mutant in the human model of *Haemophilus ducreyi* infection. *Infect. Immun.* 2000; 68:2602-2607. PMID: PMC97465
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51. Young RS, Fortney KR, Gelfanova V, Phillips C, Katz BP, Hood AF, Latimer JL, Munson, RS Jr, Hansen EJ, and **Spinola SM**. Expression of cytolethal distending toxin and hemolysin are not required for pustule formation by *Haemophilus ducreyi* in human volunteers. *Infect. Immun.* 2001; 69:1938-1942. PMID: PMC98108
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