

## CURRICULUM VITAE

### STEPHEN CHARLES KOWALCZYKOWSKI

*NAME:* Stephen Charles Kowalczykowski

*TITLE:* Distinguished Professor of Microbiology and of Molecular and Cellular Biology

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Briggs Hall - 310  
University of California, Davis  
One Shields Ave  
Davis, CA 95616-8665

*PHONE:* 530-752-5938  
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*E-MAIL:* sckowalczykowski@ucdavis.edu

#### *EDUCATION:*

Rensselaer Polytechnic Institute, Troy, New York  
B.S., Chemistry, 1972

Georgetown University, Washington, D.C.  
Ph. D., Chemistry (Biochemistry), 1976

University of Oregon, Eugene, Oregon  
Postdoctoral, Molecular Biology, 1981

#### *RESEARCH EXPERIENCE:*

Rensselaer Polytechnic Institute, Troy, New York (1972)  
Senior Thesis Research with Dr. Frederick Wedler  
Topic: "Substrate Binding Order of Sheep Brain Glutamine Synthetase"

Georgetown University, Washington, D.C. (1972-1976)  
Doctoral Thesis Research with Dr. Jacinto Steinhardt  
Topic: "Physical-Chemical Studies of Sick Cell Hemoglobin"

University of Oregon, Eugene, Oregon (1976-1981)  
American Cancer Society Postdoctoral Fellow with Dr. Peter von Hippel  
Topic: "Interactions of Bacteriophage T4-Coded Gene 32 Protein with Nucleic Acids"

Northwestern University Medical School, Chicago, Illinois (1981-1991)  
Assistant Professor of Molecular Biology (1981-1987)  
Associate Professor of Molecular Biology (1987-1991)  
Topics: "Mechanistic Studies of Genetic Recombination";  
"Biochemical Mechanism and Function of DNA Helicases"

University of California, Davis, Davis, California (1991- present)  
Professor of Microbiology and of Molecular and Cellular Biology (1991-present)  
Distinguished Professor of Microbiology and of Molecular and Cellular Biology,  
(2005-present)  
Chairman, Section of Microbiology (1992-1999)  
Member, Cancer Center, University of California Davis Medical Center (2000 –  
present)  
Director, Center for Genetics and Development (2000-2006)  
Topics: "Mechanistic Studies of Genetic Recombination";  
"Biochemical Mechanism and Function of DNA Helicases"  
"Recombinational Repair of DNA Damage in Eukaryotes"  
"Single-Molecule Assembly of Protein-DNA complexes"

*TEACHING EXPERIENCE:*

Georgetown University:

Teaching Assistant, Physical Chemistry Laboratory, (1972-1974)  
Instructor, Summer Faculty, General Chemistry II, (1973)

Northwestern University Medical School:

Graduate Biochemistry (nucleic acid structure, protein-nucleic acid  
interactions, & nucleic acid enzymology), 1982-1991

Advanced Molecular Genetics (biochemical mechanisms of genetic  
recombination and DNA repair), 1982-1991

Advanced Topics in Molecular Biology: Protein-Nucleic Acid Interactions,  
1985

University of California, Davis:

Microbial Physiology, (biochemical mechanisms of DNA replication,  
genetic recombination, and DNA repair), 1991-present

Molecular Biology, (DNA replication and recombination), 1992-present

Principles of Protein-Nucleic Acid Interactions, 1994-present

Advanced Concepts in DNA Metabolism, 2003-present

*HONORS:*

Rensselaer Polytechnic Institute Scholarship, 1968-1972

Phi Lambda Upsilon, Chemical Honor Society, 1971

Georgetown University Fellowship, 1972-1976

Sigma Xi, 1974

American Cancer Society Postdoctoral Fellowship, 1977-1980

American Cancer Society Junior Faculty Research Award, 1983-1986

Roll of Honour of Polish Science, 2000

National Institutes of Health MERIT Award, 2000-2010

American Association for the Advancement of Science, Fellow, 2001

American Academy of Microbiology, Fellow, 2003

University of California, Davis, Academic Senate, Faculty Distinguished  
Research Award, 2005

American Academy of Arts & Sciences, Fellow, 2005

National Academy of Sciences, Member, 2007

*NAMED AND KEYNOTE LECTURES:*

University of California, Davis, Biochemistry and Molecular Biology Graduate  
Group, Fall Colloquium Keynote Speaker, 2000

University of California, Berkeley, Department of Molecular and Cell Biology,  
Marian E. Koshland Seminar, Berkeley, CA, 2001

University of California, San Diego, The Herbert Stern Lecture, San Diego, CA,  
2002

Case Western University, Department of Biochemistry, Harland G. Wood  
Memorial Lecture, Cleveland, OH, 2004

Stanford University, Frontiers in Biology, Palo Alto, CA, 2005

University of California, Davis, Academic Senate, Faculty Distinguished  
Research Lecturer, 2005

University of California, Davis, Biochemistry and Molecular Biology Graduate  
Group, Fall Colloquium, Keynote Speaker, 2005

Koshland Symposium, Science@theInterface: Single Molecule Biology &  
Imaging, Institute for Biophysical Dynamics, University of Chicago, Chicago,  
IL, 2006

University at Buffalo, SUNY, Distinguished Scientist Seminar, Departments of  
Microbiology and Immunology and of Biochemistry, Buffalo, NY

University of California, Berkeley, Biophysics Graduate Group, Eran Karmon  
Memorial Keynote Lecture, Berkeley, CA, 2007

University of California, Davis, Biochemistry and Molecular Biology Graduate  
Group, Fall Colloquium, Keynote Speaker, Davis, CA 2007

Washington State University, School of Molecular Biosciences, Annual Retreat,  
Keynote Speaker, Pullman, WA, 2008

NCCR Symposium on New Trends in Structural Biology, Zurich, Switzerland,  
2008

Annual Dutch Meeting on Molecular and Cellular Biophysics, Veldhoven, The  
Netherlands, 2008

Joint 5<sup>th</sup> Structural Biology and Functional Genomics and 1<sup>st</sup> Biological Physics  
International Conference, National University of Singapore, Singapore, 2008

St. Jude Children's Research Hospital, Danny Thomas Lecture, Memphis, TN,  
2009

New York Academy of Sciences, Genome Integrity, New York, NY, 2009

*PROFESSIONAL SOCIETIES:*

American Society for Biochemistry and Molecular Biology, FASEB  
American Chemical Society, Division of Biological Chemistry  
American Society for Microbiology  
American Association for the Advancement of Sciences  
Biophysical Society

*PROFESSIONAL SERVICES:*

Associate Editor, Genes to Cells (1995-present)  
Faculty of 1000 (2001-2005)  
Editorial Board, The Journal of Biological Chemistry (2003-2008)  
Editorial Board, Journal of Bacteriology (2004-2006)  
Editorial Advisory Board, ACS Chemical Biology (2006-2008)  
Editorial Board, Proceedings of the National Academy of Sciences (2008-present)

Reviewer for the following journals:

American Journal of Human Genetics	Journal of Bacteriology
Analytical Biochemistry	Journal of Biological Chemistry
Archives of Biochemistry and Biophysics	Journal of Cell Biology
Biochemistry	Journal of Molecular Biology
Biochimica et Biophysica Acta	Journal of Molecular Evolution
Biopolymers	Journal of Molecular Microbiology and Biotechnology
Biophysical Chemistry	Microbiology and Molecular Biology Reviews
Biophysical Journal	Molecular and Cellular Biology
BioTechniques	Molecular and General Genetics
Cancer Research	Molecular Biology of Cancer
Cell	Molecular Cell
Chromasoma	Molecular Microbiology
Current Biology	Mutation Research
EMBO Journal	
European Journal of Biochemistry	
FEBS Letters	
Gene	
Genes & Development	
Genetics	

Nature	Science
Nature Cell Biology	Structure
Nature Structural Biology	Structure with Folding & Design
Nucleic Acids Research	Trends in Biochemical Sciences
Oncogene	Trends in Biotechnology
PLoS Biology	Trends in Genetics
Proceedings of the National Academy of Sciences	

*CONFERENCES ORGANIZED AND CHAIRED:*

FASEB Conference "Genetic Recombination and Genome Rearrangements", 1991, Session Chair

HFSP Conference "Recombination: Mechanisms and Biological Consequences", 1995, Co-organizer

FASEB Conference "Genetic Recombination and Genome Rearrangements", 1995, Session Chair

FASEB Conference "Genetic Recombination and Chromosome Rearrangements", 1997, Conference Vice-Chair

Keystone Symposium, Molecular Mechanisms in DNA Replication & Recombination, 1999, Co-organizer

Instituto Juan March de Estudios e Investigaciones Workshop on "Mechanisms of Homologous Recombination and Genetic Rearrangements", 1999, Madrid, Spain, Co-organizer

FASEB Conference "Genetic Recombination and Chromosome Rearrangements", 1999, Conference Chair

Keystone Symposium, Molecular Mechanisms in DNA Replication & Recombination, 2002, Session Chair

FASEB Conference, "Nucleic Acid Enzymes: Structures, Mechanisms, and Novel Applications", 2002, Conference Co-Chair

FASEB Conference, "Helicases: Structures, Function and Roles in Human Disease", 2003, Session Chair

EMBO Workshop, "Recombination Mechanisms: 40th Anniversary Meeting of the Holliday Model", Seillac, France, Session Chair

Gordon Research Conference, "Nucleic Acids", Newport, RI, Session Chair

Juan March Foundation Workshop on "Recombinational DNA Repair and its Links with DNA Replication and Chromosome Maintenance, 2004, Madrid, Spain, Conference Co-Chair

EMBO Workshop, "Helicases and NTP-Driven Nucleic Acid Machines Structure, Function and Roles in Human Disease", 2005, Conference Co-Chair, Arolla, Switzerland

Gordon Research Conference, "Nucleic Acids", Newport, RI, 2005, Vice-Chair

Gordon Research Conference, "Nucleic Acids", Newport, RI, 2006, Co-Chair

Cell Press/Massachusetts General Hospital/Fondation Ipsen Workshop, "Exciting Biologies: Biology in Motion", Evian-Les-Bains, France, Session Chair

EMBO Workshop, "Helicases and NTP-Driven Nucleic Acid Machines Structure, Function and Roles in Human Disease", 2009, Conference Co-Chair, Les Diablerets, Switzerland

*MEMBER OF THE FOLLOWING GRANT REVIEW GROUPS:*

Chicago Heart Association, 1987  
Special Review Committee (Program Grant), National Cancer Institute, 1990  
Molecular and Cellular Biophysics (BBCA), NIH (special reviewer), 1990  
Microbial Physiology and Genetics, NIH (special review group), 1990  
Physiological Chemistry, NIH (special reviewer), 1990, 1991, declined  
Special Review Committee (Program Grant), National Cancer Institute, 1991  
Nucleic Acids & Proteins Synthesis Scientific Advisory Panel, American Cancer Society, 1991-1995  
Special Review Committee, Training Grants in Molecular Biophysics, NIH, 1992  
Microbial Physiology, NIH, (special reviewer), 1995, 1996, 1997  
Biochemistry (BIO) IRG, NIH, (special reviewer), 1998  
Special Emphasis Panel, Center for Scientific Review, NIH, Chair, 1998  
Biophysical Chemistry (BBCB) Study Section, NIH (*ad hoc* member), 2002  
Biochemistry Study Section, NIH (member), 2002-2004  
Molecular Genetics A Study Section (member), 2004-2006  
Board of Scientific Counselors, NIH, NIDDK, *ad hoc* member, 2007

*EXTERNAL REVIEWER FOR THE FOLLOWING GRANTING AGENCIES:*

American Chemical Society, Petroleum Research Fund, 1986  
Chicago Heart Association, 1987  
Down's Syndrome Research Fund  
National Science Foundation  
    Biochemistry Program  
    Biophysics Program  
    Cellular Physiology Program  
    Genetics Program  
    Procaryotic Genetics Program  
    Instrumentation and Instrument Development Program  
Research Corporation  
Human Frontier Science Program, 1991, 1999  
Medical Research Council (United Kingdom), 1995  
ATIPÉ (CNRS) Program (France), 1998  
Italian Ministry for University and Research (MIUR), 1999, 2003  
The Wellcome Trust, 1999, 2000, 2005, 2009  
Association for International Cancer Research, 2000  
Fanconi Anemia Research Fund, 2005  
Council for Chemical Sciences (CW) of the Netherlands Organisation for Scientific Research (NWO), 2006  
Agence Nationale de la Recherche (France), Physics and Chemistry for Life Sciences, 2006  
French National Centre for Research, CNRS (France) 2006, 2007

**SCIENTIFIC ADVISORY BOARDS:**

Invitrogen, 2001-2006

University of Vermont NIH Program Project Grant, 2005-2010

Mismatch2Model, EU Framework Programme for Research and Technological Development, 2008-2012

**PATENTS:**

Spectroscopic Assay for Helicase Activity  
US Patent Number: 5,747,247; May 5, 1998

Single Stranded DNA Binding Proteins from Archaea  
US Patent Number: 6,852,832; February 8, 2005

Multimers of *S. solfataricus* Single-stranded DNA-Binding Protein and Methods of Use Thereof (*filed*); March 11, 2003

Reagentless sensor for single stranded DNA (*filed*).

**GRANT SUPPORT (as Principal Investigator):**

[Based on an analysis by Graduate School of Business, Columbia University done in February 2005, NIH records place my grant support above the 95<sup>th</sup> percentile of the distribution of (extramural) NIH grants over the last 25 years (along with 2,337 others).]

Past:

National Institutes of Health; #1 R01 AI-18987  
"Mechanistic Studies of Genetic Recombination"  
4/82 - 3/85; Direct Costs - \$252,812; Total Costs - \$348,881

American Cancer Society; #ACS JFRA-70  
Junior Faculty Research Award  
1/83 - 12/86; Total Award - \$63,000

National Institutes of Health; #2 R01 AI-18987  
"Mechanistic Studies of Genetic Recombination"  
4/85 - 3/90; Direct Costs - \$618,862; Total Costs - \$915,306

National Institutes of Health; #1 RO1 GM-41347;  
"Biochemical Mechanism and Function of DNA Helicases"; percentile - 3%  
12/88 - 11/93; Direct Costs - \$639,464; Total Costs - \$935,242

National Institutes of Health; #2 R01 AI-18987  
"Mechanistic Studies of Genetic Recombination"; percentile - 7.5%

4/90 - 3/95; Direct Costs - \$985,444; Total Costs - \$1,507,185

Human Frontiers Science Program Workshop Grant (co-organizer with Marie Dutreix) "Recombination - Mechanisms and Biological Consequences"  
10/95; Total Costs - \$25,000

United States Civilian and Development Foundation - Proposal Development  
Travel Grant; #PDP-24; 10/96; Total Costs - \$2,500

National Institutes of Health; #1 RO1 GM-41347;  
"Biochemical Mechanism and Function of DNA Helicases"; percentile - 4.3%  
12/93 - 3/98; Direct Costs - \$662,272; Total Costs - \$953,672

National Science Foundation; Multi-User Biological Instrumentation Program;  
DBI-9604805: "An Optical Biosensor Instrument for Analysis of Biomolecular  
Interactions in Molecular and Cellular Biology" 7/1/97-6/30/98; Total Costs -  
\$67,918

University of California, Systemwide Biotechnology Research and Education Program;  
#98-07 "Biotechnology Approaches to the Study of DNA Damage and  
Biomacromolecular Interactions" 7/1/98-6/30/99; Total Costs - \$45,000

National Science Foundation; Cooperative Science Program - Research with  
Japan  
"In Vitro Reconstitution of Homologous DNA Recombination"  
4/1/96-3/31/99; Total Costs - \$6,400

Human Frontiers Science Program; RG0063; "Recombinational Repair of DNA  
Damage in Eukaryotes" 7/1/97-6/30/00; Total Costs - \$210,000

National Institutes of Health; #2 R01 AI-18987  
"Mechanistic Studies of Genetic Recombination"; percentile - 8.9%  
4/95 - 3/00; Direct Costs - \$832,142; Total Costs - \$1,202,445

Los Alamos National Laboratory-University of California, Directed Research and  
Development, Research Partnership Initiative: "Integrated Structural Biology of  
Protein-Nucleic Acid Complexes"; 10/1/96-7/31/00; Total Costs - \$170,250

National Science Foundation; Division of International Programs - Cooperative  
Research with France (CNRS): "Molecular Mechanism of Homologous Pairing  
and DNA Strand Exchange" 3/1/97-2/28/01; Total Costs - \$8,000

University of California, Systemwide Biotechnology Research and Education Program;  
#99-10 "Biotechnology Approaches to the Studies of DNA-Protein Interactions"  
7/1/99-6/30/01; Total Costs - \$180,000 (Co-Principle Investigator)

University of California, Systemwide Biotechnology Research and Education Program;  
#99-13 "Modification of Meiotic Recombination in Interspecies Hybrids"  
7/1/99-6/30/01; Total Costs - \$177,696 (Co-Project Leader)

National Science Foundation/Nanoscale Science & Engineering; MCB-0103556  
"Biological Nanomachines: Assembly and Function of Protein-DNA Nanostructures at  
the Single-Molecule Level"  
7/01 – 6/02; Direct Costs - \$84,109; Total Costs - \$100,000 (Co-PI)

National Institutes of Health; #2 RO1 GM-41347  
"Biochemical Mechanism and Function of DNA Helicases"; percentile - 1.0%  
4/98 - 3/03; Direct Costs - \$818,397; Total Costs - \$1,139,963

The Ellison Medical Foundation; Conference & Workshop Award #AG-CW-0214-05  
"Helicases in Cancer and Aging", in Helicases and NTP-Driven Nucleic Acid  
Machines: Structure, Function, and Roles in Human Disease, 7/2005; Total Costs -  
\$10,000

National Institutes of Health; P01 CA-092584 – Program/Project Grant  
"Structural Cell Biology of DNA Repair Machines" percentile – 10%  
Total Program: 9/01 – 8/06; Total Costs - \$18,871,117 (Tainer/Cooper)  
"Multi-component Complexes in Homologous Recombination" (Kowalczykowski)  
Project #4: 1/02 – 8/06; Direct Costs - \$327,249; Total Costs - \$485,679

National Institutes of Health; R01 GM-64745  
"Single-Molecule Assembly of Protein-DNA complexes"  
6/02 - 7/07; Direct Costs - \$524,000; Total Costs - \$603,782

The Ellison Medical Foundation; Conference & Workshop Award #AG-CW-0234-06  
"Genome Structure and Maintenance", in the Gordon Research Conference on Nucleic  
Acids, 6/2006; Total Costs - \$5,000

In addition, I participated in the following collaborative grant proposals:

- 1) NIH training grant in molecular and cellular biology
- 2) MSTP grant
- 3) Cancer Center Core grant
- 4) NSF biological instrumentation grant for a 250 liter fermentor
- 5) NIH shared instrumentation grant for a gas phase protein sequenator
- 6) NIH training grant in molecular biophysics
- 7) NSF biological instrumentation grant for an IAsys biosensor
- 8) NIH research collaboration grant for a 900 MHz NMR spectrometer
- 9) NIH shared instrumentation grant for a 50 liter fermentor

Active (as Principal Investigator):

National Institutes of Health; R37 GM-62653-25 (AI-18987-25) – MERIT award  
"Mechanistic Studies of Genetic Recombination"; percentile – 0.2%  
4/00 – 3/10; Direct Costs - \$1,342,091; Total Costs - \$1,996,134

National Institutes of Health; R01 GM-41347-19  
"Biochemical Mechanism and Function of DNA Helicases"; percentile – 0.9%  
12/07 – 11/11; Direct Costs - \$1,347,926; Total Costs - \$1,957,461

National Institutes of Health; R01 GM-64745-04  
"Single-Molecule Assembly of Protein-DNA complexes"; percentile – 0.9%  
7/07 – 6/11; Direct Costs - \$760,000; Total Costs - \$1,155,200

Department of Defense; Breast Cancer Research Program; BC085223  
"Functions of BRCA2 Protein and Its Domains: Biochemical and Single-Molecule  
Analysis"; score – 1.8  
1/2009 – 12/2012; Direct Costs - \$375,000; Total Costs - \$570,000

Active (as Collaborator or Trainer):

National Institutes of Health; T32 GM-007377-29 (Erickson)  
"Training in Molecular and Cellular Biology"  
7/03 – 6/09; Direct Costs: \$1,496,561; Total Costs: \$1,627,482

National Institutes of Health, National Cancer Institute; P30 CA-93373 (de Vere  
White) "Cancer Center Support Grant"  
7/02 – 6/10; Total Annual Costs - \$1,850,810

National Institutes of Health; T32 CA-10052159 (Kung/Erickson/Privalsky)  
"Training Program in Oncogenic Signals and Chromosome Biology"  
9/06 – 9/11; Total Costs - \$1,266,350

**SEMINAR PRESENTATIONS (since 1985):**

- 1985 - University of Wisconsin, Department of Biochemistry  
Loyola University Medical School, Department of Biochemistry
- 1986 - University of Chicago, Department of Molecular Genetics and Cell Biology  
University of New Mexico, Department of Biology  
Midwest Prokaryotic Molecular Biology Club, Chicago, IL  
European Molecular Biology Organization (EMBO) Workshop on Genetic Recombination, Nethybridge, Scotland  
FASEB Meeting on Recombination and Genome Rearrangement, Saxtons River, VT
- 1987 - University of Illinois at Chicago, Department of Biological Sciences  
National Institutes of Health, Genetics and Biochemistry Branch  
Johns Hopkins University, Department of Biochemistry  
DuPont, Central Research Station  
Johns Hopkins University, Department of Chemistry  
Cornell University Medical School, Department of Microbiology  
Northwestern University, Evanston, Department of Biochemistry, Molecular Biology, and Cell Biology
- 1988 - Albert Einstein School of Medicine, Department of Biochemistry  
National Institutes of Health  
American Society for Microbiology Annual Meeting, Miami, FL  
Cold Spring Harbor Meeting on Intermediates in Genetic Recombination, Cold Spring Harbor, NY
- 1989 - Brandeis University, Department of Biochemistry  
UCLA Symposium on DNA Replication & Genetic Recombination, Keystone, CO  
University of Colorado Health Sciences Center, Department of Biochemistry & Biophysics  
University of Colorado, Department of Molecular, Cellular, & Developmental Biology  
University of Arizona, Department of Biochemistry  
FASEB Meeting: Recombination and Genome Rearrangement, Copper Mountain, CO.  
University of Chicago, Department of Biochemistry  
University of Utah Medical Center, Department of Biochemistry  
University of North Carolina, Department of Biochemistry  
National Institutes of Health, Laboratory of Molecular Biology  
National Cancer Institute, Frederic Cancer Research Facility  
St. Louis University, Department of Biochemistry and Molecular Biology
- 1990 - University of Iowa, Department of Biochemistry  
Indiana University, Department of Chemistry  
University of Utah, Department of Biology  
Hutchinson Cancer Research Center, Division of Basic Sciences  
University of Oregon, Institute of Molecular Biology  
University of California, Davis, Department of Microbiology

- University of California, Berkeley, Division of Molecular and Cell Biology  
Harvard Medical School, Laboratory of Toxicology  
EMBO Meeting on Genetic Recombination, Seillac, France  
RecA and Related Proteins, Saclay, France  
Columbia University, Department of Microbiology
- 1991 - Stanford University Medical School, Department of Biochemistry  
FASEB Meeting on Recombination and Genome Rearrangement, Saxtons  
River, VT  
West Coast Bacterial Physiologists Asilomar Conference, Asilomar, CA
- 1992 - Keystone Symposium, Molecular Mechanisms in DNA Replication &  
Recombination Taos, NM  
University of California, Davis, Genetics Graduate Group  
University of Oregon, Institute of Molecular Biology  
EMBO Workshop on "Genetic Recombination", Seillac, France  
University of New Mexico, Department of Cell Biology  
University of Texas, Austin, Department of Chemistry & Biochemistry  
University of Nebraska, Lincoln, Center for Biotechnology
- 1993 - Arrowhead Genetics Conference, University of California, Los Angeles  
Stanford University, Cancer Biology  
Oregon State University, Department of Biochemistry & Biophysics  
University of Vermont, Department of Biochemistry  
University of Rochester Medical School, Department of Biophysics  
Steenbock Symposium on Protein-Nucleic Acid Interactions, University of  
Wisconsin  
Gordon Research Conference, "Nucleic Acids", New Hampton, New Hampshire  
FASEB Meeting on Recombination & Genome Rearrangement, Copper  
Mountain, CO  
University of Chicago, Department of Molecular Genetics & Cell Biology
- 1994 - EMBO Workshop on "Genetic Recombination", Seillac, France  
American Society for Microbiology Meeting, Las Vegas, NV  
University of Paris-Sud, Institut Curie-Biologie, Orsay, France  
University of Tokyo, Institute of Medical Science, Tokyo, Japan  
The Institute of Physical and Chemical Research (RIKEN), Saitama, Japan  
University of Osaka, Department of Biology, Osaka, Japan  
Annual Meeting of the Molecular Biology Society of Japan, Kobe, Japan
- 1995 - National Institutes of Health  
Stanford University, Department of Biology  
FASEB Conference "Genetic Recombination and Genome Rearrangements"  
Human Frontiers Science Conference "Recombination: Mechanisms and  
Biological Consequences", Avignon, France (co-organizer)  
CSSA Annual Meeting: Symposium on Classical and Molecular Cytogenetics,  
St. Louis, MO.  
Emory University School of Medicine, Department of Microbiology &  
Immunology  
University of Texas Health Sciences Center, Department of Microbiology &  
Molecular Genetics, Houston, TX

- 1996 - Keystone Symposium, Molecular Mechanisms in DNA Replication & Recombination Taos, NM  
University of North Carolina, Department of Biochemistry & Biophysics  
Vanderbilt University, Department of Biochemistry  
Northwestern University Medical School, Department of Cell and Molecular Biology  
EMBO Workshop on "Genetic Recombination", Seillac, France  
Maxygen, Santa Rosa, CA  
University of Southern California, Department of Biological Sciences  
University of California, Los Angeles, Department of Microbiology and Molecular Genetics  
University of Oregon, Institute of Molecular Biology
- 1997 - Clontech, Palo Alto, CA  
Los Alamos National Laboratory, DNA Damage and Repair Group, Life Sciences Division, Los Alamos, NM  
FASEB Conference "Genetic Recombination and Chromosome Rearrangements" (vice-chair), Snowmass, CO  
St. Petersburg University, Molecular Genetics Center, St. Petersburg, Russia  
Russian Academy of Sciences, Institute of Cytology and Genetics, "Modern Concepts in Evolutionary Genetics", Novosibirsk, Russia  
Kimeragen, Philadelphia, PA  
3R (Replication, Recombination and Repair) Symposium, Miki City, Japan  
Osaka University, Research Institute for Microbial Diseases, Osaka, Japan  
University of California, Davis, Division of Biological Sciences  
University of Toronto, Dept. of Medical Genetics & Microbiology, Toronto, Canada  
University of California, Berkeley, Dept. of Molecular and Cell Biology
- 1998 - Louisiana State University Medical Center, Department of Microbiology & Immunology  
Keystone Symposium, "Bacterial Chromosomes", Sante Fe, NM  
Osaka University, Research Institute for Microbial Diseases, Osaka, Japan  
Symposium on Molecular and Cellular Mechanisms of Genetic Recombination, Osaka, Japan  
Chang Gung University, Dept. of Molecular and Cellular Biology, Kwei-San, Taiwan  
National Yang-Ming University, Institute of Genetics, Taipei, Taiwan  
EMBO Workshop, "The Molecular Mechanisms and Consequences of Genetic Recombination", Seillac, France  
IBC Conference "Display Technologies" San Francisco, CA  
FASEB Conference, "Nucleic Acid Enzymes: Mechanisms and Diseases", Saxtons River, VT  
The Memorial Sloan-Kettering Cancer Center, Molecular Biology Program  
Columbia University College of Physicians & Surgeons, Department of Microbiology  
Georgia Institute of Technology, Department of Biology

- Lawrence Livermore National Laboratory, Biology & Biotechnology Research Program
- 1999 - University of Arizona, Department of Molecular and Cellular Biology  
Keystone Symposium, "Molecular Mechanisms in DNA Replication & Recombination", Taos, NM  
Instituto Juan March de Estudios e Investigaciones Workshop on "Mechanisms of Homologous Recombination and Genetic Rearrangements", Madrid, Spain  
Gordon Research Conference, "Enzymes, Coenzymes, and Metabolic Pathways", Kimball Union Academy, Meriden, NH  
University of Washington, Department of Genetics, Werner's Syndrome Retreat, Seattle, WA  
FASEB Conference, "Genetic Recombination and Chromosome Rearrangements", Snowmass, CO  
Erasmus University, Department of Cell Biology & Genetics, Rotterdam, The Netherlands  
Tenth Conference on DNA topoisomerases, European Cancer Centre, Amsterdam, The Netherlands  
University of Tokyo, Institute of Medical Sciences, Tokyo, Japan  
National Institute of Genetics, Mishima, Japan  
3R (Replication, Recombination and Repair) Symposium, Miki City, Japan  
Instituto Juan March de Estudios e Investigaciones Workshop on "Helicases as Molecular Motors in Nucleic Acid Strand Separation", Madrid, Spain
- 2000 – Gordon Research Conference, "Reversible Association Structural and Molecular Biology", Ventura, CA  
University of Maryland School of Medicine, Molecular & Cell Biology Program  
University of Medicine and Dentistry of New Jersey, Microbiology & Molecular Biology  
The Scripps Research Institute, Molecular and Cell Biology Affinity Group  
University of California Davis Medical Center, Cancer Center  
EMBO Workshop, "The Molecular Mechanisms and Consequences of Genetic Recombination", Seillac, France  
FASEB Conference, "Nucleic Acid Enzymes: Mechanisms and Diseases", Saxtons River, VT  
Institut d'Études Scientifiques de Cargèse, International Summer School, "DNA and Chromosomes: Physical and Biological Consequences", Corsica, France  
Gordon Research Conference, "Mutagenesis", Oxford, United Kingdom  
Imperial Cancer Research Fund, Clare Hall Laboratories, London, United Kingdom  
"Workshop on Site-Specific Recombination and Transposition", Marine Biological Laboratory, Woods Hole, MA  
University of California, Davis, Biochemistry and Molecular Biology Graduate Group, Fall Colloquium Keynote Speaker  
University of California, Davis, Cancer Center, "Cancer Research Symposium"

- National Academy of Sciences Colloquium, "Links Between Recombination and Replication: Vital Roles of Recombination", Irvine, CA  
Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan
- 2001 – Keystone Symposium, "Bacterial Chromosomes", Santa Fe, NM  
University of Delaware, Department of Chemistry & Biochemistry, Newark, DE  
University of Oregon, Institute of Molecular Biology, Eugene, OR  
Environmental Mutagen Society Annual Meeting, San Diego, CA  
University of California, Berkeley, Department of Molecular and Cell Biology, Marian E. Koshland Seminar, Berkeley, CA  
Harvard University, Department of Molecular and Cellular Biology, The Biological Laboratories, Boston, MA  
American Society for Microbiology Annual Meeting, Orlando, FL  
FASEB Conference, "Helicases: Structure, Function and Roles In Human Disease", Saxtons River, VT  
FASEB Conference, "Genetic Recombination and Chromosome Rearrangements", Snowmass, CO  
University of Oregon, Institute of Molecular Biology, "Petefest", Eugene, OR  
Invitrogen Corp., Carlsbad, CA
- 2002 – Keystone Symposium, "Molecular Mechanisms of DNA Replication & Recombination", Snowbird, Utah  
3R (Replication, Recombination and Repair) Symposium, Miki City, Japan  
Lawrence Berkeley National Laboratory, Life Sciences Division, Berkeley, CA  
Biophysical Society, Annual Meeting, San Francisco, CA  
Keystone Symposium, "DNA Helicases, Cancer and Aging", Tahoe City, CA  
International Workshop, "DNA in Chromatin, at the Frontiers of Biology, Biophysics and Genomics", Arcachon, France  
EMBO Workshop, "The Molecular Mechanisms and Consequences of Genetic Recombination", Seillac, France  
Gordon Research Conference, "Nucleic Acids", Bristol, RI  
FASEB Conference, "Nucleic Acid Enzymes: Mechanisms, Structures and Applications", Saxtons River, VT  
Oxford Workshop, "Site-Specific Recombination, Genetic Transposition and DNA Dynamics", St. Catherine's College, Oxford, UK  
Cancer Research U.K., Clare Hall Laboratories, South Mimms, United Kingdom  
Commissariat a l'Energie Atomique, Fontenay-Aux-Roses, France  
Institut Curie, Section de Recherche, Paris, France  
Invitrogen Corp., Carlsbad, CA  
National Institutes of Health, NIDDKD  
Banbury Conference, "DNA Recombination and Repair", Cold Spring Harbor Laboratory, NY  
University of California, San Diego, The Herbert Stern Lecture, San Diego, CA  
Structural Biology of DNA Repair Workshop, Lawrence Berkeley National Laboratory, Berkeley, CA  
University of California, Davis, Genetics Graduate Group, Davis, CA  
University of California, Davis, Biophysics Graduate Group, Davis, CA

- 2003 – American Association for the Advancement of Science, Annual Meeting,  
Nanotechnology 2003, Denver, CO  
University of Miami, Department of Biochemistry and Molecular Biology, Miami,  
FL  
Duke University Medical School, Department of Biochemistry, Durham, NC  
Rice University, Dept. of Biochemistry & Cell Biology, Houston, TX  
Invitrogen Corp., Carlsbad, CA  
University of Utah Medical School, Department of Biochemistry  
International Workshop on Werner Syndrome, Lansdowne, VA  
FASEB Conference, “Helicases: Structure, Function and Roles in Human  
Disease”, Saxtons River, VT  
FASEB Conference, “Genetic Recombination and Chromosome  
Rearrangements”, Snowmass, CO  
Institute of Biotechnology, Vilnius, Lithuania  
Cold Spring Harbor Laboratory, Cold Spring Harbor, NY  
University of Chicago, Department of Biochemistry and Molecular Biology,  
Chicago, IL  
University of Illinois, Department of Microbiology, Champaign-Urbana, IL  
Center for Biomedical Genetics, “Biomolecular Dynamics: From living cells to  
single molecules”, Amsterdam, The Netherlands
- 2004 – National Institutes of Health, DNA Repair Interest Group, VideoCast from  
Lawrence Livermore National Laboratory, Livermore, CA  
New England Biolabs, Beverly, MA  
University of Massachusetts Medical School, Department of Biochemistry &  
Molecular Pharmacology, Worcester, MA  
Cambridge University, Department of Oncology, MRC Research Centre,  
Cambridge, England  
University of Oxford, Department of Biochemistry, Oxford, England  
NACON VI (“Recognition Studies in Nucleic Acids”), University of Sheffield,  
England  
National Cancer Institute, NIH, Think Tank, “Cell Decisions in Response to DNA  
Damage: Survival vs. Programmed Cell Death”, Bethesda, MD  
Case Western University, Department of Biochemistry, Harland G. Wood  
Memorial Lecture, Cleveland, OH  
EMBO Workshop, “Recombination Mechanisms: 40th Anniversary Meeting of  
the Holliday Model”, Seillac, France  
Gordon Research Conference, “Nucleic Acids”, Newport, RI  
FASEB Conference, “Nucleic Acid Enzymes”, Saxton’s River, VT  
American Chemical Society National Meeting, Symposium on Biophysical  
Chemistry and Novel Imaging of Single Molecules and Single Cells,  
Philadelphia, PA  
“Workshop on Site-Specific Recombination and Transposition”, Marine  
Biological Laboratory, Woods Hole, MA  
Environmental Mutagen Society Annual Meeting, Pittsburgh, PA  
Washington University School of Medicine, Department of Biochemistry and  
Molecular Biophysics, St. Louis, MO

American Society for Microbiology, "DNA Repair and Mutagenesis",  
Southampton, Bermuda  
University of Toulouse, Laboratory of Microbiology and Molecular Genetics,  
Toulouse, France  
Juan March Foundation, "Recombinational DNA Repair and its Links with DNA  
Replication and Chromosome Maintenance", Madrid, Spain  
2005 – Keystone Symposium, "Mechanisms of DNA Replication and Recombination",  
Keystone, Colorado  
Harvard Medical School, Department of Cell Biology, Cambridge, MA  
Stanford University, Frontiers in Biology, Palo Alto, CA  
University of Maryland, Department of Chemistry and Biochemistry, Baltimore,  
MD  
National Institutes of Health, NIDDKD/GBB, Bethesda, MD  
American Society of Biochemistry and Molecular Biology, Annual Meeting,  
"DNA Replication and Associated Processes", San Diego, CA  
University of Texas Medical Branch, Department of Human Biological Chemistry  
and Genetics, Galveston, TX  
University of California, Faculty Research Lecture  
Abdus Salam International Center for Theoretical Physics, "Workshop on  
Biopolymers: Thermodynamics, Kinetics, and Mechanics of DNA, RNA and  
Proteins", Trieste, Italy  
University of California, Department of Biology, San Diego, CA  
EMBO Conference, "Helicases and NTP-Driven Nucleic Acid Machines  
Structure, Function and Roles in Human Disease", Arolla, Switzerland  
FASEB Conference, "Genetic Recombination and Genome Rearrangements",  
Snowmass, CO  
University of California, Davis, Biochemistry and Molecular Biology Graduate  
Group, Fall Colloquium, Keynote Speaker  
University of Georgia, Department of Microbiology, Athens, GA  
2006 – University of California, Berkeley, Plant and Microbial Biology, Berkeley, CA  
Keystone Symposium, "Nucleic Acid Enzymes", Taos, NM  
Biophysical Society, Annual Meeting, Salt Lake City, UT  
Oregon Health and Science University, Department of Biochemistry and  
Molecular Biology, Portland, OR  
University of Oregon, Institute of Molecular Biology, Eugene, OR  
Frontiers in Chemical Biology: Single Molecules, Royal Society of Chemistry,  
Churchill College, University of Cambridge  
Leading Edge Lecture, City of Hope Graduate School, Duarte, CA  
Invitrogen Corp., Carlsbad, CA  
Columbia University, College of Physicians and Surgeons, Department of  
Biochemistry and Molecular Biophysics, New York, NY  
Memorial Sloan-Kettering Cancer Center, Molecular Biology Program, New  
York, NY  
Kavli Institute for Theoretical Physics, "New Physical Approaches to Molecular  
and Cellular Machines", University of California, Santa Barbara, CA

EMBO Conference, "Recombination Mechanisms and the Maintenance of Genome Stability", Seillac, France

Koshland Symposium, Science@theInterface: Single Molecule Biology & Imaging, Institute for Biophysical Dynamics, University of Chicago, Chicago, IL

Gordon Research Conference, "Single Molecule Approaches to Biology", New London, NH

University of California, Davis, School of Medicine, Department of Biochemistry and Molecular Medicine, Davis, CA

Crosstalk in Chromosome Mechanics: Developing an Interdisciplinary Approach", Cancer Center, University of California, Davis

UK Society for General Microbiology, "DNA Replication, Recombination, Repair and Cell Cycle", York, UK

University of Nottingham, Queen's Medical Centre, Institute of Genetics, Nottingham, UK

University of Edinburgh, Department of Chemistry and Institute of Cell and Molecular Biology, Edinburgh, UK

Oxford University, Department of Chemistry, Oxford, UK

Oxford Workshop, "Site-Specific Recombination, Transposition and DNA Dynamics", St. Catherine's College, Oxford, UK

University at Buffalo, SUNY, Distinguished Scientist Seminar, Departments of Microbiology and Immunology and of Biochemistry, Buffalo, NY

Cornell University, Biophysics Colloquium, Ithaca, NY

University of Wisconsin, Department of Bacteriology, Madison, WI

John Innes Centre, Norwich, UK

International University of Andalusia Workshop, "Mechanisms and Biological Consequences of Recombinational DNA Repair-Mediated Genome Instability", Baeza, Spain

University of California, Berkeley, Structural and Quantitative Biology seminars, Departments of Chemistry and Molecular & Cell Biology, Berkeley, CA

2007 – Workshop on Single Molecule Fluorescence, PicoQuant and the Center for Biophotonics, University of California, Davis, CA

Gordon Research Conference, "Nucleic Acids", Newport, RI

FASEB Conference, "Helicases & NTP-Driven Nucleic Acid Motors: Structure, Function, Mechanisms & Roles in Human Disease", Indian Wells, CA

International Congress on Radiation Research, San Francisco, CA

FASEB Conference, "Genetic Recombination and Chromosome Rearrangements", Snowmass, CO

American Chemical Society National Meeting, Division of Physical Chemistry, Symposium on Single Molecule Spectroscopy, Imaging, and Manipulation of Biomolecular Systems, Boston, MA

University of California, Berkeley, Biophysics Graduate Group, Eran Karmon Memorial Lecture, Berkeley, CA

University of California, Davis, Biochemistry and Molecular Biology Graduate Group, Fall Colloquium, Keynote Speaker, Davis, CA

- University of California, San Francisco, Department of Biochemistry & Biophysics, San Francisco, CA  
Cell Press/Massachusetts General Hospital/Fondation Ipsen Workshop, "Exciting Biologies: Biology in Motion", Evian-Les-Bains, France  
University of Lausanne, Center for Integrative Genomics, Lausanne, Switzerland  
Delft University of Technology, Kavli Institute of Nanoscience, Nanoscience Seminar, Delft, The Netherlands  
Vrije Universiteit Amsterdam, Department of Physics and Astronomy, Amsterdam, The Netherlands  
University of California, Davis, "Probing Life" seminar series, Davis, CA  
American Society for Cell Biology, 47<sup>th</sup> Annual Meeting, "Single Molecule Studies", Washington, DC  
National Institutes of Health, NIDDK, Genetics and Biochemistry Branch, Washington, DC
- 2008 – Institute for Complex Adaptive Matter, Annual Conference, "Grand Challenges in Biological Matter", Santa Fe, NM  
National Academy of Sciences, Annual Meeting, Washington, DC  
EMBO Conference, "Recombination Mechanisms", Il Ciocco, Italy  
Institut Curie, Génétique, Paris, France  
London Research Institute Symposium on Chromosome Biology, London, England  
Salk, Caltech, USC Meeting on DNA Replication and Genome Integrity, San Diego, CA  
Washington State University, School of Molecular Biosciences, Annual Retreat, Pullman, WA  
NCCR Symposium on New Trends in Structural Biology, Zurich, Switzerland  
Workshop on Site-specific Recombination, Transposition and DNA Dynamics, Woods Hole, MA  
Annual Dutch Meeting on Molecular and Cellular Biophysics, Veldhoven, The Netherlands  
Erasmus University, Department of Cell Biology & Genetics, Rotterdam, The Netherlands  
Joint 5<sup>th</sup> Structural Biology and Functional Genomics and 1<sup>st</sup> Biological Physics International Conference, National University of Singapore, Singapore
- 2009 – Biophysical Society, 53rd Annual Meeting, Boston, MA  
St. Jude Children's Research Hospital, Danny Thomas Lecture, Memphis, TN  
Cantoblanco Workshop on "Molecular Mechanisms of Genomic Stability", Madrid, Spain  
Gordon Research Conference, "Chromosome Dynamics", Il Ciocco, Italy  
New York Academy of Sciences, Genome Integrity, New York, NY  
EMBO Workshop, "Helicases and NTP-Driven Nucleic Acid Machines Structure, Function and Roles in Human Disease", Les Diablerets, Switzerland

**PUBLICATIONS**

1. Kowalczykowski, S.C. (1977). Physical-chemical studies of sickle cell hemoglobin: Acid denaturation, viscosity, and solution density. Georgetown University, Ph.D. Thesis.
2. Kowalczykowski, S.C. and Steinhardt, J. (1977). Kinetics of hemoglobin S gelation followed by continuously sensitive low-shear viscosity. *J. Mol. Biol.* **115**, 201-213.
3. Steinhardt, J., Kowalczykowski, S.C., and Jones, M.M. (1978). Progress in interpreting the phase transitions of sickle-cell hemoglobin. *In: Biochemical and Clinical Aspects of Hemoglobin Abnormalities*, W.S. Caughey, eds. (New York: Academic Press), pp. 251-278.
4. Kowalczykowski, S.C., Lonberg, N., Newport, J.W., Paul, L.S., and von Hippel, P.H. (1980). On the thermodynamics and kinetics of the cooperative binding of bacteriophage T4-coded gene 32 (helix-destabilizing) protein to nucleic acid lattices. *Biophys. J.* **32**, 403-418.
5. Newport, J.W., Kowalczykowski, S.C., Lonberg, N., Paul, L.S., and von Hippel, P.H. (1980). Molecular aspects of the interactions of T4-coded gene 32- protein and DNA polymerase (gene 43-protein) with nucleic acids. *In: Mechanistic Studies of DNA Replication and Genetic Recombination*, B. Alberts, eds. (New York: Academic Press), **19**, pp. 485-505.
6. Kowalczykowski, S.C., Lonberg, N., Newport, J.W., and von Hippel, P.H. (1981). Interactions of bacteriophage T4-coded gene 32 protein with nucleic acids. I. Characterization of the binding interactions. *J. Mol. Biol.* **145**, 75- 104.
7. Newport, J.W., Lonberg, N., Kowalczykowski, S.C., and von Hippel, P.H. (1981). Interactions of bacteriophage T4-coded gene 32 protein with nucleic acids. II. Specificity of binding to DNA and RNA. *J. Mol. Biol.* **145**, 105-121.
8. Lonberg, N., Kowalczykowski, S.C., Paul, L.S., and von Hippel, P.H. (1981). Interactions of bacteriophage T4-coded gene 32 protein with nucleic acids. III. Binding properties of two specific proteolytic digestion products of the protein (G32P\*I and G32P\*III). *J. Mol. Biol.* **145**, 123-138.
9. Kowalczykowski, S.C., Bear, D.G., and von Hippel, P.H. (1981). Single-stranded DNA binding proteins. *In: The Enzymes*, P.D. Boyer, eds. (New York: Academic Press), **14**, pp. 373-442.
10. Lohman, T.M. and Kowalczykowski, S.C. (1981). Kinetics and mechanism of the association of the bacteriophage T4 gene 32 (helix-destabilizing) protein with single-stranded nucleic acids. Evidence for protein translocation. *J. Mol. Biol.* **152**, 67-109.

11. von Hippel, P.H., Kowalczykowski, S.C., Lonberg, N., Newport, J.W., Paul, L.S., Stormo, G.D., and Gold, L. (1982). Autoregulation of gene expression. Quantitative evaluation of the expression and function of the bacteriophage T4 gene 32 (single-stranded DNA binding) protein system. **J. Mol. Biol.** **162**, 795-818.
12. von Hippel, P.H., Kowalczykowski, S.C., Lonberg, N., Newport, J.W., Paul, L.S., Stormo, G.D., and Gold, L. (1983). Autoregulation of expression of gene 32 protein of bacteriophage T4: A quantitative analysis. *In: The Bacteriophage T4*, C.K. Matthews, E.M. Kutter, G. Mosig and P.B. Berget, eds. (Washington, D.C.: American Society for Microbiology), pp. 202-207.
13. Menetski, J.P. and Kowalczykowski, S.C. (1985). Interaction of recA protein with single-stranded DNA: Quantitative aspects of binding affinity modulation by nucleotide cofactors. **J. Mol. Biol.** **181**, 281-295.
14. Kowalczykowski, S.C., Paul, L.S., Lonberg, N., Newport, J.W., McSwiggen, J.A., and von Hippel, P.H. (1986). Cooperative and noncooperative binding of protein ligands to nucleic acid lattices: Experimental approaches to the determination of thermodynamic parameters. **Biochemistry** **25**, 1226-1240.
15. Kowalczykowski, S.C. (1986). Interaction of recA protein with a photoaffinity analogue of ATP, 8-azido-ATP: Determination of nucleotide cofactor binding parameters and of the relationship between ATP binding and ATP hydrolysis. **Biochemistry** **25**, 5872-5881.
16. Roman, L.J. and Kowalczykowski, S.C. (1986). Relationship of the physical and enzymatic properties of *Escherichia coli* recA protein to its strand exchange activity. **Biochemistry** **25**, 7375-7385.
17. Kowalczykowski, S.C., Clow, J.C., Somani, R., and Varghese, A. (1987). Effects of the *Escherichia coli* SSB protein on the binding of *Escherichia coli* RecA protein to single-stranded DNA: Demonstration of competitive binding and the lack of a specific protein-protein interaction. **J. Mol. Biol.** **193**, 81- 95.
18. Kowalczykowski, S.C. and Krupp, R.A. (1987). Effects of the *Escherichia coli* SSB protein on the single-stranded DNA-dependent ATPase activity of *Escherichia coli* RecA protein: Evidence that SSB protein facilitates the binding of RecA protein to regions of secondary structure within single-stranded DNA. **J. Mol. Biol.** **193**, 97-113.
19. Menetski, J.P. and Kowalczykowski, S.C. (1987). Transfer of recA protein from one polynucleotide to another: Kinetic evidence for a ternary intermediate during the transfer reaction. **J. Biol. Chem.** **262**, 2085-2092.

20. Menetski, J.P. and Kowalczykowski, S.C. (1987). Transfer of recA protein from one polynucleotide to another: Effect of ATP and determination of the processivity of ATP hydrolysis during transfer. **J. Biol. Chem.** **262**, 2093- 2100.
21. Kowalczykowski, S.C. (1987). Mechanistic aspects of the DNA strand exchange activity of *Escherichia coli* recA protein. **Trends Biochem. Sci.** **12**, 141- 145.
22. Kowalczykowski, S.C., Clow, J., and Krupp, R.A. (1987). Properties of the duplex DNA-dependent ATPase activity of *Escherichia coli* recA protein and its role in branch migration. **Proc. Natl. Acad. Sci. USA** **84**, 3127-3131.
23. Menetski, J.P., Varghese, A., and Kowalczykowski, S.C. (1988). Properties of the high-affinity single-stranded DNA binding state of the *Escherichia coli* recA protein. **Biochemistry** **27**, 1205-1212.
24. Benedict, R.C. and Kowalczykowski, S.C. (1988). Increase of the DNA strand assimilation activity of recA protein by removal of the C-terminus and structure-function studies of the resulting protein fragment. **J. Biol. Chem.** **263**, 15513-15520.
25. Lavery, P.E. and Kowalczykowski, S.C. (1988). Biochemical basis of the temperature-inducible constitutive protease activity of the recA441 protein of *Escherichia coli*. **J. Mol. Biol.** **203**, 861-874.
26. Roman, L.J. and Kowalczykowski, S.C. (1989). Characterization of the helicase activity of the *Escherichia coli* RecBCD enzyme using a novel helicase assay. **Biochemistry** **28**, 2863-2873.
27. Roman, L.J. and Kowalczykowski, S.C. (1989). Characterization of the ATPase activity of *Escherichia coli* RecBCD enzyme: Relationship of ATP hydrolysis to the unwinding of duplex DNA. **Biochemistry** **28**, 2873-2881.
28. Kowalczykowski, S.C., Burk, D. L., and Krupp, R.A. (1989). Biochemical events essential to the recombinational activity of the *Escherichia coli* recA protein: I. Properties of the mutant recA142 protein. **J. Mol. Biol.** **207**, 719-733.
29. Kowalczykowski, S.C. and Krupp, R.A. (1989). Biochemical events essential to the recombinational activity of the *Escherichia coli* recA protein: II. Co-dominant effects of recA142 protein on wild-type recA protein function. **J. Mol. Biol.** **207**, 735-747.
30. Menetski, J.P. and Kowalczykowski, S.C. (1989). Enhancement of *Escherichia coli* recA protein enzymatic function by dATP. **Biochemistry** **28**, 5871-5881.
31. Roman, L.J. and Kowalczykowski, S.C. (1989). Formation of heteroduplex DNA promoted by the combined activities of *Escherichia coli* recA and recBCD proteins. **J. Biol. Chem.** **264**, 18340-18348.

32. Lindberg, G., Kowalczykowski, S.C., Rist, J.K., Sugino, A., and Rothman-Denes, L.B. (1989). Purification and characterization of the coliphage N4-coded single-stranded DNA binding protein. **J. Biol. Chem.** **264**, 12700-12708.
33. Kowalczykowski, S.C. and Roman, L.J. (1990). Reconstitution of homologous pairing activity *in vitro* dependent upon the combined activities of purified *E. coli* recA, recBCD, and SSB proteins. *In: Molecular Mechanisms in DNA Replication and Recombination*, C. Richardson and R. Lehman, eds. (Alan R. Liss, Inc. New York), (New Series) **127**, 357-373.
34. Menetski, J.P., Bear, D.G., and Kowalczykowski, S.C. (1990). Stable DNA heteroduplex formation by the *Escherichia coli* recA protein in the absence of ATP hydrolysis. **Proc. Natl. Acad. Sci. U.S.A.** **87**, 21-25.
35. Lavery, P.E. and Kowalczykowski, S.C. (1990). Properties of recA441 protein-catalyzed DNA strand exchange can be attributed to an enhanced ability to compete with SSB protein. **J. Biol. Chem.** **265**, 4004-4010.
36. Menetski, J.P. and Kowalczykowski, S.C. (1990). Biochemical properties of the *Escherichia coli* recA430 protein: Analysis of a mutation which affects the interaction of the ATP-recA protein complex with single-stranded DNA. **J. Mol. Biol.** **211**, 845-855.
37. Kowalczykowski, S.C. (1990). Thermodynamic data for protein-nucleic acid interactions. *In: Landolt-Bornstein: Numerical Data and Functional Relationships in Science and Technology (New Series) Group VII: Biophysics, Nucleic Acids* **1d**, W. Saenger, ed. (Berlin: Springer-Verlag), 244-263.
38. Lauder, S.D. and Kowalczykowski, S.C. (1991). Asymmetry in the recA protein-DNA filament. **J. Biol. Chem.** **266**, 5450-5458.
39. Roman, L.J., Dixon, D.A., and Kowalczykowski, S.C. (1991). RecBCD-dependent joint molecule formation promoted by the *Escherichia coli* RecA and SSB proteins. **Proc. Natl. Acad. Sci. U.S.A.** **88**, 3367-3371.
40. Kowalczykowski, S.C. (1991). Biochemistry of genetic recombination: Energetics and mechanism of DNA strand exchange. **Annu. Rev. Biophys. Biophys. Chem.** **20**, 539-575.
41. Eggleston, A.K. and Kowalczykowski, S.C. (1991). An overview of homologous pairing and DNA strand exchange proteins. **Biochimie** **73**, 163-176.
42. Kowalczykowski, S.C. (1991). Biochemical and biological function of *Escherichia coli* recA protein: behavior of mutant recA proteins. **Biochimie** **73**, 289-304.

43. Dixon, D.A. and Kowalczykowski, S.C. (1991). Homologous pairing *in vitro* stimulated by the recombination hotspot, Chi. **Cell**, **66** 361-371.
44. Roman, L.J., Eggleston, A.K., and Kowalczykowski, S.C. (1992). Processivity of the DNA helicase activity of *Escherichia coli* recBCD enzyme. **J. Biol. Chem.**, **267**, 4207-4214.
45. Lavery, P.E. and Kowalczykowski, S.C. (1992). Enhancement of recA protein-promoted DNA strand exchange by volume-occupying agents. **J. Biol. Chem.**, **267**, 9307-9314.
46. Lavery, P.E. and Kowalczykowski, S.C. (1992). A post-synaptic role for single-stranded DNA-binding protein in recA protein-promoted DNA strand exchange. **J. Biol. Chem.**, **267**, 9315-9320.
47. Menetski, J.P., Varghese, A., and Kowalczykowski, S.C. (1992). The physical and enzymatic properties of *Escherichia coli* recA protein display anion-specific inhibition. **J. Biol. Chem.**, **267**, 10400-10404.
48. Lavery, P.E. and Kowalczykowski, S.C. (1992). Biochemical basis of the constitutive repressor cleavage activity of recA730 protein. A comparison to recA441 and recA803 proteins. **J. Biol. Chem.**, **267**, 20648-20658.
49. Madiraju, M.V.V.S., Lavery, P.E., Kowalczykowski, S.C., and Clark, A.J. (1992). Enzymatic properties of the recA803 protein, a partial suppressor of *recF* mutations. **Biochemistry**, **31**, 10529-10535.
50. Rehrauer, W.M. and Kowalczykowski, S.C. (1993). Alteration of the nucleoside triphosphate (NTP) catalytic domain within *Escherichia coli* recA protein attenuates NTP hydrolysis but not joint molecule formation. **J. Biol. Chem.**, **268**, 1292-1297.
51. Dixon, D.A. and Kowalczykowski, S.C. (1993). The recombination hotspot,  $\chi$ , is a regulatory sequence that acts by attenuating the nuclease activity of the *E. coli* recBCD enzyme. **Cell**, **73**, 87-96.
52. Mitsis, P.G., Kowalczykowski, S.C., and Lehman, I.R. (1993). A single-stranded DNA binding protein from *Drosophila melanogaster*: Characterization of the heterotrimeric protein and its interaction with single-stranded DNA. **Biochemistry**, **32**, 5257-5266.
53. Eggleston, A.K. and Kowalczykowski, S.C. (1993). Biochemical characterization of a mutant recBCD enzyme, the recB<sup>2109</sup>CD enzyme, which lacks  $\chi$ -specific, but not non-specific, nuclease activity. **J. Mol. Biol.**, **231**, 605-620.

54. Eggleston, A.K. and Kowalczykowski, S.C. (1993). The mutant recBCD enzyme, recB<sup>2109</sup>CD enzyme, has helicase activity but does not promote efficient joint molecule formation *in vitro*. **J. Mol. Biol.**, **231**, 621-633.
55. Allen, M.J., Dong, X.F., O'Neill, T.E., Yau, P., Kowalczykowski, S.C., Gatewood, J., Balhorn, R., and Bradbury, E.M. (1993). Atomic force microscope measurements of nucleosome cores assembled along defined DNA sequences. **Biochemistry**, **32**, 8390-8396.
56. Lauder, S.D. and Kowalczykowski, S.C. (1993). Negative co-dominant inhibition of recA protein function: Biochemical properties of the recA1, recA13, and recA56 proteins and the effect of recA56 protein on the activities of the wild-type recA protein. **J. Mol. Biol.**, **234**, 72-86.
57. Dixon, D.A., Churchill, J.J, and Kowalczykowski, S.C. (1994). Reversible inactivation of the *Escherichia coli* recBCD enzyme by the recombination hotspot,  $\chi$ , *in vitro*: Evidence for functional inactivation or loss of the recD subunit. **Proc. Natl. Acad. Sci. USA**, **91**, 2980-2984.
58. Kowalczykowski, S.C. (1994). *In vitro* reconstitution of homologous recombination reactions. **Experientia**, **50**, 204-215.
59. Kowalczykowski, S.C. and Eggleston, A.K. (1994). Homologous pairing and DNA strand exchange proteins. **Annu. Rev. Biochem.**, **63**, 991-1043.
60. Kowalczykowski, S.C., Dixon, D.A., Eggleston, A.K., Lauder, S.D., and Rehrauer, W.M. (1994). Biochemistry of homologous recombination in *Escherichia coli*. **Microbiol. Rev.**, **58**, 401-465.
61. Kowalczykowski, S.C. and Zarlring, D. (1995). Homologous recombination proteins and their potential applications in gene targeting technology. *In*: "Gene Targeting", M. A. Vega, ed. (CRC Press, Inc.), Chapter 7, 167-210.
62. Eggleston, A.K., O'Neill, T.E., Bradbury, E.M., and Kowalczykowski, S.C. (1995). Unwinding of nucleosomal DNA by a DNA helicase. **J. Biol. Chem.**, **270**, 2024-2031.
63. Kowalczykowski, S.C. and Krupp, R.A. (1995). DNA strand exchange promoted by RecA protein in the absence of ATP: Implications for the mechanism of energy transduction in protein-promoted nucleic acid transactions. **Proc. Natl. Acad. Sci. USA**, **92**, 3478-3482.
64. Dixon, D.A. and Kowalczykowski, S.C. (1995). Role of the *Escherichia coli* recombination hotspot,  $\chi$ , in RecABCD-dependent homologous pairing. **J. Biol. Chem.**, **270**, 16360-16370.

65. Eggleston, A.K., Rahim, N.A., and Kowalczykowski, S.C. (1996). A helicase assay based on the displacement of fluorescent, nucleic acid-binding dyes. **Nucl. Acids Res.**, **24**, 1179-1186.
66. Rehrauer, W.M. and Kowalczykowski, S.C. (1996). The DNA binding site(s) of the *Escherichia coli* RecA protein. **J. Biol. Chem.**, **271**, 11996-12002.
67. Mazin, A.V. and Kowalczykowski, S.C. (1996). The specificity of the secondary DNA binding site of RecA protein defines its role in DNA strand exchange. **Proc. Natl. Acad. Sci. USA**, **93**, 10673-10678.
68. Tracy, R.B. and Kowalczykowski, S.C. (1996). *In vitro* selection of preferred DNA pairing sequences by the *Escherichia coli* RecA protein. **Genes & Dev.**, **10**, 1890-1903.
69. Rehrauer, W.M., Lavery, P.E., Palmer, E.L., Singh, R.N., and Kowalczykowski, S.C. (1996). Interaction of *Escherichia coli* RecA protein with LexA repressor: I. LexA repressor cleavage is competitive with binding of a secondary DNA molecule. **J. Biol. Chem.**, **271**, 23865-23873.
70. Harmon, F.G., Rehrauer, W.M., and Kowalczykowski, S.C. (1996). Interaction of *Escherichia coli* RecA protein with LexA repressor. II. Inhibition of DNA strand exchange by the uncleavable LexA S119A repressor argues that recombination and SOS induction are competitive processes. **J. Biol. Chem.**, **271**, 23874-23883.
71. Sugiyama, T., Zaitseva, E.M., and Kowalczykowski, S.C. (1997). A single-stranded DNA-binding protein is needed for efficient presynaptic complex formation by the *Saccharomyces cerevisiae* Rad51 protein. **J. Biol. Chem.**, **272**, 7940-7945.
72. Anderson, D.G. and Kowalczykowski, S.C. (1997). The recombination hot spot  $\chi$  is a regulatory element that switches the polarity of DNA degradation by the RecBCD enzyme. **Genes & Dev.**, **11**, 571-581.
73. Anderson, D.G., Churchill, J.J., and Kowalczykowski, S.C. (1997). Chi-activated RecBCD enzyme possesses 5'  $\rightarrow$  3' nucleolytic activity, but RecBC enzyme does not: Evidence suggesting that the alteration induced by Chi is not simply ejection of the RecD subunit. **Genes to Cells**, **2**, 117-128.
74. Bianco, P.R. and Kowalczykowski, S.C. (1997). The recombination hotspot Chi is recognized by the translocating RecBCD enzyme as the single strand of DNA containing the sequence 5'-GCTGGTGG-3'. **Proc. Natl. Acad. Sci. USA**, **94**, 6706-6711.
75. Anderson, D.G. and Kowalczykowski, S.C. (1997). The translocating RecBCD enzyme stimulates recombination by directing RecA protein onto ssDNA in a  $\chi$ -regulated manner. **Cell**, **90**, 77-86.

76. Tracy, R.B., Chédin, F., and Kowalczykowski, S.C. (1997). The recombination hot spot Chi is embedded within islands of preferred DNA pairing sequences in the *E. coli* genome. ***Cell***, **90**, 205-206.
77. Tracy, R.B., Baumohl, J.K., and Kowalczykowski, S.C. (1997). The preference for GT-rich DNA by the yeast Rad51 protein defines a set of universal pairing sequences. ***Genes & Dev.***, **11**, 3423-3431.
78. Zaitsev, E.N. and Kowalczykowski, S.C. (1998). Binding of double-stranded DNA by *Escherichia coli* RecA protein monitored by a fluorescent-dye displacement assay. ***Nucl. Acids Res.***, **26**, 650-654.
79. New, J.H., Sugiyama, T., Zaitseva, E., and Kowalczykowski, S.C. (1998). Rad52 protein stimulates DNA strand exchange by Rad51 and replication protein A. ***Nature***, **391**, 407-410.
80. Mazin, A.V. and Kowalczykowski, S.C. (1998). The function of the secondary DNA-binding site of RecA protein during DNA strand exchange. ***EMBO J.***, **17**, 1161-1168.
81. Mazin, A.V. and Kowalczykowski, S.C. (1998). The synergistic interaction between RecA protein and SSB protein during DNA strand exchange. *In*: "Modern Concepts in Evolutionary Genetics", (V.K. Shumny and A.L. Markel, eds.), Nauka, Novosibirsk, Russia, Proceedings of the Conference.
82. Harmon, F.G. and Kowalczykowski, S.C. (1998). RecQ helicase, in concert with RecA, and SSB proteins, initiates and disrupts DNA recombination. ***Genes & Dev.***, **12**, 1134-1144.
83. Seitz, E.M., Brockman, J.P., Sandler, S.J., Clark, A.J., and Kowalczykowski, S.C. (1998). RadA protein is an archaeal RecA protein homolog that catalyzes DNA strand exchange. ***Genes & Dev.***, **12**, 1248-1253.
84. Arnold, D.A., Bianco, P.R., and Kowalczykowski, S.C. (1998). The reduced levels of  $\chi$  recognition exhibited by the RecBC<sup>1004</sup>D enzyme reflect its recombination defect *in vivo*. ***J. Biol. Chem.***, **273**, 16476-16486.
85. Sugiyama, T., New, J.H., and Kowalczykowski, S.C. (1998). DNA annealing by Rad52 protein is stimulated by specific interaction with the complex of replication protein A and single-stranded DNA. ***Proc. Natl. Acad. Sci. USA***, **95**, 6049-6054.
86. Chédin, F., Seitz, E.M., and Kowalczykowski, S.C. (1998). Novel homologs of replication protein A in Archaea: implications for the evolution of ssDNA-binding proteins. ***Trends Biochem. Sci.***, **23**, 273-277.

87. Anderson, D.G. and Kowalczykowski, S.C. (1998). SSB protein controls RecBCD enzyme nuclease activity during unwinding: A new role for looped intermediates. **J. Mol. Biol.**, **282**, 275-285.
88. Zaitsev, E.N. and Kowalczykowski, S. C. (1998). Essential monomer-monomer contacts define the minimal length for the N-terminus of RecA protein. **Mol. Microbiol.**, **29**, 1317-1318.
89. Bianco, P.R., Tracy, R.B., and Kowalczykowski, S.C. (1998). DNA strand exchange proteins: A biochemical and physical comparison. **Front. Biosci.**, **3**, D570-D603 (<http://www.bioscience.org/1998/v3/d/bianco/list.htm>).
90. Ponomarenko, M.P., Ponomarenko, J.V., Titov, I.I., Kolchanov, N.A., Mazin, A.V., and Kowalczykowski, S.C. (1998). Predpochtitel'nost' RecA-filamenta k posledovatel'nostiam DNK korrelirovet s geneticheskim kodom. [Preference of RecA-filament to the DNA sequences correlates with genetic code]. **Dokl. Akad. Nauk. [Proceedings of the Russian Academy of Science]**, **363**, 122-125.
91. Rehrauer, W.M., Bruck, I., Woodgate, R., Goodman, M.F., and Kowalczykowski, S.C. (1998). Modulation of RecA nucleoprotein function by the mutagenic UmuD'C protein complex. **J. Biol. Chem.**, **273**, 32384-32387.
92. Anderson, D.G. and Kowalczykowski, S.C. (1998). Reconstitution of an SOS response pathway: derepression of transcription in response to DNA breaks. **Cell**, **95**, 975-979.
93. Zaitseva, E.M., Zaitsev, E.N., and Kowalczykowski, S.C. (1999). The DNA binding properties of the *Saccharomyces cerevisiae* Rad51 protein. **J. Biol. Chem.**, **274**, 2907-2915.
94. Bianco, P.R. and Kowalczykowski, S.C. (1999). RecA protein. *In*: Encyclopedia of Life Sciences, John Wiley & Sons, Ltd: Chichester, <http://www.els.net/> [doi:10.1038/npg.els.0000584] [print version: (2002), 46-54 (article ref. A584)].
95. Arnold, D.A. and Kowalczykowski, S.C. (1999). RecBCD helicase/nuclease. *In*: Encyclopedia of Life Sciences, Nature Publishing Group, London, <http://www.els.net> [print version: (2002), 55-60 (article ref. A586)].
96. Zaitsev, E.N. and Kowalczykowski, S.C. (1999). The simultaneous binding of two double-stranded DNA molecules by *Escherichia coli* RecA protein. **J. Mol. Biol.**, **287**, 21-31.
97. Churchill, J.J., Anderson, D.G., and Kowalczykowski, S.C. (1999). The RecBC enzyme loads RecA protein onto ssDNA asymmetrically and independently of  $\chi$ , resulting in constitutive recombination activation. **Genes & Dev.**, **13**, 901-911.

98. Harmon, F.G., DiGate, R.J., and Kowalczykowski, S.C. (1999). RecQ helicase and topoisomerase III comprise a novel DNA strand passage function: a conserved mechanism for control of DNA recombination. ***Mol. Cell***, **3**, 611-620.
99. Mazin, A.V. and Kowalczykowski, S.C. (1999). A novel property of the RecA nucleoprotein filament: activation of dsDNA for strand exchange *in trans*. ***Genes & Dev.***, **13**, 2005-2016.
100. Harmon, F.G. and Kowalczykowski, S.C. (2000). Coupling of DNA helicase function to DNA strand exchange. ***Methods Mol. Biol.***, **152**, 75-89.
101. Anderson, D.G., Churchill, J.J., and Kowalczykowski, S.C. (1999). A single mutation, RecB<sup>D1080A</sup>, eliminates RecA protein loading but not Chi recognition by RecBCD enzyme. ***J. Biol. Chem.***, **274**, 27139-27144.
102. Zaitsev, E.N. and Kowalczykowski, S.C. (1999). Enhanced monomer-monomer interactions can suppress the recombination deficiency of the *recA142* allele. ***Mol. Microbiol.***, **34**, 1-9.
103. Mazin, A.V., Zaitseva, E., Sung, P., and Kowalczykowski, S.C. (2000). Tailed duplex DNA is the preferred substrate for Rad51 protein-mediated homologous pairing. ***EMBO J.***, **19**, 1148-1156.
104. Arnold, D.A. and Kowalczykowski, S.C. (2000). Facilitated loading of RecA protein is essential to recombination by RecBCD enzyme. ***J. Biol. Chem.***, **275**, 12261-12265.
105. Chédin, F., Ehrlich, S.D., and Kowalczykowski, S.C. (2000). The *Bacillus subtilis* AddAB helicase/nuclease is regulated by its cognate Chi sequence *in vitro*. ***J. Mol. Biol.***, **298**, 7-20.
106. Zaitsev, E.N. and Kowalczykowski, S.C. (2000). A novel pairing process promoted by *Escherichia coli* RecA protein: Inverse DNA and RNA strand exchange. ***Genes & Dev.*** **14**, 740-749.
107. Churchill, J.J. and Kowalczykowski, S.C. (2000). Identification of the RecA protein-loading domain of RecBCD enzyme. ***J. Mol. Biol.***, **297**, 537-542.
108. Kowalczykowski, S.C. and von Hippel, P.H. (eds.) (2000). The replication-recombination interface. ***Trends Biochem. Sci.***, **25**.
109. Kowalczykowski, S.C., and von Hippel, P.H. (2000). Tokio Kogoma (1939-1997) ***Trends Biochem. Sci.*** **25**, 155.
110. Kowalczykowski, S.C. (2000). Initiation of recombination and recombination-dependent replication. ***Trends Biochem. Sci.***, **25**, 156-165.

111. Bianco, P.R. and Kowalczykowski, S.C. (2000). The translocation step size and mechanism of the RecBC helicase. **Nature**, **405**, 368-372.
112. Seitz, E.M. and Kowalczykowski, S.C. (2000). The DNA binding and pairing preference of the archaeal RadA protein demonstrates a universal characteristic of DNA strand exchange proteins. **Mol. Microbiol.**, **37**, 555-560.
113. Arnold, D.A., Handa, N., Kobayashi, I., and Kowalczykowski, S.C. (2000). A novel, 11-nucleotide variant of  $\chi$ ,  $\chi^*$ : one of a class of sequences defining the *E. coli* recombination hotspot,  $\chi$ . **J. Mol. Biol.**, **300**, 469-479.
114. Mazin, A.V., Bornarth, C.J., Solinger, J.A., Heyer, W.-D., and Kowalczykowski, S.C. (2000). Rad54 protein is targeted to pairing loci by the Rad51 nucleoprotein filament. **Mol. Cell**, **6**, 583–592.
115. Kowalczykowski, S.C. (2000). Some assembly required.... **Nature Struct. Biol.**, **7**, 1087-1089.
116. Harmon, F.G. and Kowalczykowski, S.C. (2001). Biochemical characterization of the DNA helicase activity of the Escherichia coli RecQ helicase. **J. Biol. Chem.**, **276**, 232–243 (published online October 6, 2000 as 10.1074/jbc.M006555200).
117. Bianco, P.R., Brewer, L.R., Corzett, M., Balhorn, R., Yeh, Y., Kowalczykowski, S.C., and Baskin, R.J. (2001). Processive translocation and DNA unwinding by individual RecBCD enzyme molecules. **Nature**, **409**, 374-378.
118. Solinger, J.A., Lutz, G., Sugiyama, T., Kowalczykowski, S.C., and Heyer, W.-D. (2001). Rad54 protein stimulates heteroduplex DNA formation in the synaptic phase via specific interactions with the presynaptic Rad51 nucleoprotein filament. **J. Mol. Biol.**, **307**, 1207-1221.
119. Seitz, E.M., Haseltine, C. A., and Kowalczykowski, S.C. (2001). DNA recombination and repair in the Archaea. In "Archaea: Ancient Microbes, Extreme Environments, and the Origin of Life", P. Blum, ed., **Advances in Applied Microbiology**, **50**, 101-169.
120. Dillingham, M. S. and Kowalczykowski, S. C. (2001). A step backward in advancing DNA replication: rescue of stalled replication forks by RecG. **Mol. Cell**, **8**, 734-736.
121. Yang, S., Yu, X., Seitz, E.M., Kowalczykowski, S.C., and Egelman, E.H. (2001). Archaeal RadA protein binds DNA as both helical filaments and octameric rings. **J. Mol. Biol.**, **314**, 1077-1085.

122. Chédin, F. and Kowalczykowski, S.C. (2002). A novel family of regulated helicases/nucleases from Gram-positive bacteria: insights into the initiation of DNA recombination. ***Mol. Microbiol.*** **43**, 823-834.
123. Haseltine, C. A., and Kowalczykowski, S.C. (2002). A distinctive single-stranded DNA-binding protein from the archaeon *Sulfolobus solfataricus*. ***Mol. Microbiol.***, **43**, 1505-1516.
124. New, J.H. and Kowalczykowski, S.C. (2002). Rad52 protein has a second stimulatory role in DNA strand exchange that complements Replication protein-A function. ***J. Biol. Chem.***, **277**, 26171-26176 (published online May 9, 2002 as 10.1074/jbc.M203670200).
125. Sugiyama, T. and Kowalczykowski, S.C. (2002). Rad52 protein associates with RPA-ssDNA to accelerate Rad51-mediated displacement of RPA and presynaptic complex formation. ***J. Biol. Chem.***, **277**, 31663-31672 (published online June 19, 2002 as 10.1074/jbc.M203494200).
126. Kantake, N., Madiraju, M.V.V.M., Sugiyama, T., and Kowalczykowski, S.C. (2002). *Escherichia coli* RecO protein anneals ssDNA complexed with its cognate ssDNA-binding protein: A common step in genetic recombination. ***Proc. Natl. Acad. Sci. USA***, **99**, 15327-15332 (published November 18, 2002, as 10.1073/pnas.252633399).
127. Kowalczykowski, S.C. (2002). Molecular mimicry connects BRCA2 to Rad51 and recombinational DNA repair. ***Nature Struct. Biol.***, **9**, 897-899.
128. Spies, M., Dillingham, M.S., and Kowalczykowski, S.C. (2003). DNA helicases. In "McGraw-Hill Yearbook of Science & Technology", New York, N. Y., 95-98.
129. Lio, Y.-C., Mazin, A.V., and Kowalczykowski, S.C., and Chen, D.J. (2003). Complex formation by the human Rad51B and Rad51C DNA repair proteins and their activities *in vitro*. ***J. Biol. Chem.***, **278**, 2469-2478 (published online November 8, 2002 as 10.1074/jbc.M211038200).
130. Stohl, E.A., Brockman, J., Burkle, K.L., Morimatsu, K., Kowalczykowski, S.C., and Seifert, H.S. (2003) *Escherichia coli* RecX inhibits RecA recombinase and coprotease activities *in vitro* and *in vivo*. ***J. Biol. Chem.***, **278**, 2278-2285 (published online November 9, 2002 as 10.1074/jbc.M210496200).
131. Mazin, A.V., Alexeev, A., and Kowalczykowski, S.C. (2003). A novel function of Rad54 protein: stabilization of the Rad51 nucleoprotein filament. ***J. Biol. Chem.***, **278**, 14029–14036 (published online February 3, 2003 as 10.1074\_jbc.M212779200).

132. Alexeev, A., Mazin, A.V., and Kowalczykowski, S.C. (2003). Rad54 protein possesses chromatin remodeling activity stimulated by the Rad51-ssDNA nucleoprotein filament. *Nature Struct. Biol.*, **10**, 182-186 (published online 10 February 2003 as doi.10.1038/nsb901).
133. Veaute, X., Jeusset, J., Soustelle, C., Kowalczykowski, S.C., Le Cam, E., and Fabre, F. (2003). The Srs2 helicase prevents homologous recombination by disrupting Rad51 nucleofilaments. *Nature*, **423**, 309-312.
134. Dillingham, M. S., Spies, M., and Kowalczykowski, S.C. (2003). RecBCD enzyme is a bipolar DNA helicase. *Nature*, **423**, 893 - 897.
135. Mirshad, J.K. and Kowalczykowski, S.C. (2003). The biochemical basis of the constitutive coprotease activity of RecA P67W protein. *Biochemistry*, **42**, 5937-5944.
136. Mirshad, J.K. and Kowalczykowski, S.C. (2003). The biochemical characterization of a mutant RecA protein altered in DNA-binding loop 1. *Biochemistry*, **42**, 5945-5954.
137. Morimatsu, K. and Kowalczykowski, S.C. (2003). RecFOR proteins load RecA protein onto gapped DNA to accelerate DNA strand exchange: A universal step of recombinational repair. *Mol. Cell*, **11**, 1337-1347.
138. Kantake, N., Sugiyama, T., Kolodner, R.D., and Kowalczykowski, S.C. (2003). The recombination-deficient mutant RPA (rfa1-t11) is displaced slowly from single-stranded DNA by Rad51 protein. *J. Biol. Chem.*, **278**, 23410-23417 (published online April 14, 2003 as doi:10.1074/jbc.M302995200).
139. Harmon, F.G., Brockman, J.P., and Kowalczykowski, S.C. (2003). RecQ helicase stimulates both DNA catenation and changes in DNA topology by topoisomerase III. *J. Biol. Chem.*, **278**, 42668-42678 (published online August 8, 2003 as 10.1074/jbc.M302994200).
140. Spies, M., Bianco, P.R., Dillingham, M. S., Handa, N., Baskin, R.J., and Kowalczykowski, S.C. (2003). A molecular throttle: The recombination hotspot  $\chi$  controls DNA translocation by the RecBCD helicase. *Cell*, **114**, 647-654.
141. Mazina, O.M., Mazin, A.V., Nakagawa T., Kolodner, R.D., and Kowalczykowski, S.C. (2004). *Saccharomyces cerevisiae* Mer3 helicase stimulates 3'→5' DNA heteroduplex extension by Rad51: Implications for crossover control in meiotic recombination. *Cell*, **117**, 47-56.
142. Singleton, M.R., Dillingham, M.S., Gaudier, M., Kowalczykowski, S.C., and Wigley, D.B. (2004). Crystal structure of RecBCD reveals a machine for processing DNA breaks. *Nature*, **432**, 187-193.

143. Spies, M. and Kowalczykowski, S.C. (2005). Homologous recombination by the RecBCD and RecF pathways. *In* "The Bacterial Chromosome", N.P. Higgins, ed., (ASM Press, Washington, D.C.), 389-403.
144. Kowalczykowski, S.C. (2005). Cancer: Catalyst of a catalyst. ***Nature***, **433**, 591-592.
145. Handa, N., Bianco, P.R., Baskin, R.J., and Kowalczykowski, S.C. (2005). Direct visualization of RecBCD movement reveals co-translocation of the RecD motor after  $\chi$ -recognition. ***Mol. Cell***, **17**, 745-750.
146. Thomä, N.H., Czyzewski, B.K., Alexeev, A.A., Mazin, A.V., Kowalczykowski, S.C., and Pavletich, N.P. (2005). Structure of the SWI2/SNF2 chromatin-remodeling domain of eukaryotic Rad54. ***Nature Struct. Mol. Biol.***, **12**, 350-356.
147. Spies, M., Dillingham, M.S., and Kowalczykowski, S.C. (2005). DNA helicases. *In* "McGraw-Hill Encyclopedia of Science & Technology", New York, N. Y.
148. Dillingham, M.S., Webb, M.R., and Kowalczykowski S.C. (2005). Bipolar DNA translocation contributes to highly processive DNA unwinding by RecBCD enzyme. ***J. Biol. Chem.***, **280**, 37069 - 37077 (published online July 22, 2005 as 10.1074/jbc.M505520200).
149. Spies, M., Dillingham, M.S., and Kowalczykowski S.C. (2005). Translocation by the RecB motor is an absolute requirement for  $\chi$ -recognition and RecA protein loading by RecBCD enzyme. ***J. Biol. Chem.***, **280**, 37078 – 37087 (published online July 22, 2005 as 10.1074/jbc.M505520200).
150. Bianco, P.R. and Kowalczykowski, S.C. (2005). RecA protein. *In*: "Encyclopedia of Life Sciences", John Wiley & Sons, Ltd: Chichester, <http://www.els.net>, doi:10.1038/npg.els.0003925.
151. Spies, M. and Kowalczykowski, S.C. (2006). The RecA-binding locus of RecBCD enzyme defines a generalized domain for recruitment of DNA strand exchange proteins. ***Mol. Cell***, **21**, 573-580.
152. Wu, Y., Sugiyama, T., and Kowalczykowski, S.C. (2006). DNA annealing mediated by Rad52 and Rad59 proteins. ***J. Biol. Chem.***, **281**, 15441-15449 (published online March 25, 2006 as doi:10.1074/jbc.M601827200).
153. Seitz, E.M. and Kowalczykowski, S.C. (2006). Human Rad51 protein displays enhanced homologous pairing of DNA sequences resembling those at genetically unstable loci. ***Nucl. Acids Res.***, **34**, 2847-2852.

154. Chédin, F., Handa, N., Dillingham, M.S., and Kowalczykowski, S.C. (2006). The AddAB helicase/nuclease forms a stable complex with its cognate  $\chi$  sequence during translocation. **J. Biol. Chem.**, **281**, 18610-18617 (published online April 21, 2006 as doi:10.1074/jbc.M600882200).
155. Amitani, I., Baskin, R.J., and Kowalczykowski, S.C. (2006). Visualization of Rad54, a chromatin-remodeling protein, translocating on single DNA molecules. **Mol. Cell**, **23**, 143-148.
156. Galletto, R., Amitani, I., Baskin, R.J., and Kowalczykowski, S.C. (2006). Direct observation of individual RecA filaments assembling on single DNA molecules. **Nature**, **443**, 875-878 (published online September 20, 2006 as doi:10.1038/nature05197).
157. Wu, Y., Siino, J.S., Sugiyama, T., and Kowalczykowski, S.C. (2006). The DNA binding preference of Rad52 and Rad59 proteins: Implications for their function in homologous recombination. **J. Biol. Chem.**, **281**, 40001-40009 (published online October 12, 2006 as doi:10.1074/jbc.M608071200).
158. Sugiyama, T., Kantake, N., Wu Y., and Kowalczykowski, S.C. (2006). Rad52-mediated DNA annealing after Rad51-mediated DNA strand exchange promotes second ssDNA capture. **EMBO J.**, **25**, 5539–5548 (published online November 9, 2006 as doi:10.1038/sj.emboj.7601412).
159. Handa, N. and Kowalczykowski, S.C. (2007). A RecA mutant, RecA<sup>730</sup>, suppresses the recombination deficiency of the RecBC<sup>1004</sup>D- $\chi^*$  interaction *in vitro* and *in vivo*. **J. Mol. Biol.**, **365**, 1314-1325 (published online November 1, 2006 as doi:10.1016/j.jmb.2006.10.090).
160. Galletto, R. and Kowalczykowski, S.C. (2007). RecA. **Curr. Biol.** **17**, R395-R397.
161. Nimonkar, A.V., Amitani, I., Baskin, R.J., and Kowalczykowski, S.C. (2007). Single-molecule imaging of Tid1/Rdh54, a Rad54 homolog that translocates on duplex DNA and can disrupt joint molecules. **J. Biol. Chem.**, **282**, 30776 - 30784 (published online August 16, 2007 as doi:10.1074/jbc.M704767200).
162. Spies, M., Amitani, I., Baskin, R.J., and Kowalczykowski, S.C. (2007). RecBCD enzyme switches lead motor subunits in response to  $\chi$ -recognition. **Cell**, **131**, 694-705 (doi:10.1016/j.cell.2007.9.023).
163. Wu, Y., Kantake, N., Sugiyama, T., and Kowalczykowski, S.C. (2008). Rad51 protein controls Rad52-mediated DNA annealing. **J. Biol. Chem.**, **283**, 14883-92 (published online March 12, 2008 as doi:10.1074/jbc.M801097200).
164. Kowalczykowski, S.C. (2008). Structural biology: Snapshots of DNA repair. **Nature**, **453**, 463-466 (published online May 21, 2008 as doi:10.1038/453463a).

165. Dillingham, M.S., Tibbles, K.L., Hunter, J.L., Bell, J.C., Kowalczykowski, S.C., and Webb, M.R. (2008). A fluorescent single-stranded DNA binding protein as a probe for sensitive, real time assays of helicase activity. ***Biophys. J.***, **95**, 3330-3339 (published online July 3, 2008, as 10.1529/biophysj.108.133512).
166. Nimonkar, A.V., Özsoy, A.Z., Genschel, J., Modrich, P., and Kowalczykowski, S.C. (2008). Human Exonuclease 1 and BLM helicase interact to resect DNA and initiate DNA repair. ***Proc. Natl. Acad. Sci. U.S.A.***, **105**, 16906-16911 (published online October 29, 2008, as doi: 10.1073/pnas.0809380105).
167. Dillingham, M.S. and Kowalczykowski, S.C. (2008). RecBCD enzyme and the repair of double-stranded DNA breaks. ***Microbiol. Mol. Biol. Rev.***, **72**, 642–671 (published online as doi:10.1128/MMBR.00020-08).
168. Hilario, J., Amitani, I., Baskin, R.J., and Kowalczykowski, S.C. (2009). Direct imaging of human Rad51 nucleoprotein dynamics on individual DNA molecules. ***Proc. Natl. Acad. Sci. U.S.A.***, **106**, 361-368 (published online January 2, 2009, doi: 10.1073/pnas.0811965106).
169. Nimonkar, A.V., Sica, A., and Kowalczykowski, S.C. (2009). Rad52 promotes second-end DNA capture in double-strand break repair to form complement-stabilized joint molecules. ***Proc. Natl. Acad. Sci. U.S.A.***, **106**, 3077-3082 (published online February 9, 2009, doi:10.1073/pnas.0813247106).
170. Haseltine, C. A. and Kowalczykowski, S.C. (2009). An archaeal Rad54 protein remodels DNA and stimulates DNA strand exchange by RadA. ***Nucl. Acids Res.***, **37**, 2757-2770 (published online March 12, 2009, doi:10.1093/nar/gkp068).
171. Carreira, A., Hilario, J., Amitani, I., Baskin, R.J., Shivji, M.K.K., Venkitaraman, A.R., and Kowalczykowski, S.C. (2009). The BRC repeats of BRCA2 modulate the DNA-binding selectivity of RAD51. ***Cell***, **136**, 1032-1043 (doi:10.1016/j.cell.2009.02.019).
172. Handa, N., Morimatsu, K., Lovett, S.T., and Kowalczykowski, S.C. (2009). Reconstitution of initial steps of double-strand DNA break repair by the RecF pathway of *E. coli*. ***Genes & Dev.***, **23**, 1234-1245.
173. Handa, N., Amitani, I., Gumlaw, N., Sandler, S.J., and Kowalczykowski, S.C. (2009). Single-molecule analysis of a red fluorescent RecA Protein reveals a defect in nucleoprotein filament nucleation that relates to its reduced biological functions. ***J. Biol. Chem.***, **284**, 18664-73. (published online May 5, 2009, doi:10.1074/jbc.M109.004895).

174. Nimonkar, A.V. and Kowalczykowski, S.C. (2009). Second-end DNA capture in double-strand break repair: How to catch a DNA by its tail. ***Cell Cycle***, **8**, 1816-1817.
175. Carreira, A. and Kowalczykowski, S.C. (2009). BRCA2: Shining light on the regulation of DNA-binding selectivity by RAD51. ***Cell Cycle***, (*in press*).