JOURNAL OF VIROLOGY
Volume 24  Contents for December 1977  Number 3

Animal Viruses
Temperature-Sensitive Growth Regulation in One Type of Transformed Rat Cells Induced by the tsa Mutant of Polyoma Virus.  ROLAND SEIF AND FRANCOIS CIZUN* ................................................................. 721


Genetic Relatedness of Equine Herpesvirus Types 1 and 3.  GEORGE P. ALLEN, DENNIS J. O'CALLAGHAN, AND CHARLES C. RANDALL* ................................................................. 761

Two Methyltransferase Activities in the Purified Virions of Vesicular Stomatitis Virus.  DOUGLAS TESTA AND AMIYA K. BANERJEE* ................................................................. 786

Peptide Map Comparison of Infectious Pancreatic Necrosis Virus-Specific Polypeptides.  PETER DOBOS* AND DAVID ROWE ................................................................. 805

Polypeptides of the Surface Projections and the Ribonucleoprotein of Avian Infectious Bronchitis Virus.  MALCOLM R. MACNAUGHTON,* M. HILARY MADGE, HEATHER A. DAVIES, AND ROBERT R. DOURMASHKIN .......... 821

Transcriptase Activity Associated with Rabies Virion.  AKIHIKO KAWAI ................................................................. 826

Replication of Epstein-Barr Virus: Ultrastructural and Immunofluorescent Studies of P3HR1-Superinfected Raji Cells.  J-M. SEIGNEURIN,* M. VUILLAUME, G. LENOIR, AND G. DE-THÉ ................................................................. 836

Complex of Virus-Like Particles Containing Double-Stranded RNA from Thiela-viopsis basicola.  R. F. BOZARTH* AND A. GOENAGA ..................... 846

Structural Protein Markers in the Avian Oncoviruses.  CARL W. RETTENBIER* AND HIDESABURO HANAFUSA ................................................................. 850

Synthesis and Glycosylation of Polyprotein Precursors to the Internal Core Proteins of Friend Murine Leukemia Virus.  LEONARD H. EVANS, STEVEN DRESLER, AND DAVID KABAT* ................................................................. 865

Properties of Influenza C Virus Grown in Cell Culture.  RICHARD J. O'CALLAGHAN,* SISTER MONICA LOUGHLIN, DEIDRE D. LABAT, AND CALDERON HOWE ................................................................. 875

Effects of Filipin on the Structure and Biological Activity of Enveloped Viruses.  ZENOWIJP MAJUK, ROBERT BITTMAN,* FRANK R. LANDSBERGER,* AND RICHARD W. COMPS* ................................................................. 883

Formation of Recombinants Between Snowshoe Hare and La Crosse Bunyaviruses.  J. GENTSCH, L. R. WYNNE, J. P. CLEWLEY, R. E. SHOPE, AND D. H. L. BISHOP* ................................................................. 893

Uncoating and Gene Expression of Simian Virus 40 in CV-1 Cell Nuclei Inoculated by Microinjection.  E. G. DIACUMAKOS AND E. L. GERSHEY* ................................................................. 903

Transient Association of Semliki Forest Virus Capsid Protein with Ribosomes.  HANS SÖDERLUND* AND ISMO ULMANEN ................................................................. 907

Transformation-Defective Mutants of Rous Sarcoma Virus with src Gene Deletions of Varying Length.  SADAKI KAWAI, PETER H. DUESBERG, AND HIDESABURO HANAFUSA* ................................................................. 910

Bacterial Viruses
"Host Shutoff" Function of Bacteriophage T7: Involvement of T7 Gene 2 and Gene 0.7 in the Inactivation of Escherichia coli RNA Polymerase.  BRUCE A. HESSELBACH AND DAI NAKADA* ................................................................. 736

Continued on following page
I Protein: Bacteriophage T7-Coded Inhibitor of Escherichia coli RNA Polymerase. Bruce A. Hesselbach and DAI Nakada* ........................................ 746

DNA Replication in Bacteriophage-Infected Staphylococcus aureus. Michele H. Ubelaker and Eugene D. Rosenblum* .................................................. 768

Slow Switchover from Host RNA Synthesis to Bacteriophage RNA Synthesis After Infection of Escherichia coli with a T4 Mutant Defective in the Bacteriophage T4-Induced Unfolding of the Host Nucleoid. Michael A. Tigges, Claudia J. H. Bursch, and D. Peter Snustad* ................................ 775

Suppression of Gene 49 Mutations of Bacteriophage T4 by a Second Mutation in Gene X: Structure of Pseudorevertant DNA. D. B. Shah* and Lisa Delorenzo ...................................................... 794

Erratum

Fragmentation of Bacillus Bacteriophage φ105 DNA by Restriction Endonuclease EcoRI: Evidence for Complementary Single-Stranded DNA in the Cohesive Ends of the Molecule. Barbara M. Scher, Donald H. Dean, and Anthony J. Garro ......................................................... 915

* Asterisk refers to person to whom inquiries regarding the paper should be addressed.
**Animal Viruses**

**Differential Synthesis of Mammalian Type C Viral Gene Products in Infected Cells.** **Jeffery M. Krakower, Mariano Barbacid,** and **Stuart A. Aaronson**


Stimulation of Cellular Thymidine Kinases by Human Cytomegalovirus. **John E. Estes** and Eng-Shang Huang

Characterization of the Autoregulation of Simian Virus 40 Gene A. **James C. Alwine,** Steven I. Reed, and George R. Stark

Prolongation of Herpes Simplex Virus Latency in Cultured Human Cells by Temperature Elevation. **Frank J. O'Neill**

Size and Genetic Content of Viral RNAs in Avian Oncovirus-Infected Cells. **William S. Hayward**

Genetic Variation in the RNA Transcripts of Endogenous Virus Genes in Uninfected Chicken Cells. **San Y. Wang, William S. Hayward,** and Hidesaburo Hanafusa

Visna Virus RNA Synthesis. **M. Brahic,** P. Filippi, R. Vigne, and A. T. Haase

Crossed Immunoelectrophoretic Studies of the Solubility and Immunogenicity of Herpes Simplex Virus Antigens. **Bent F. Vestergaard,** Ole J. Bjerrum, Bodil Norrild, and Per C. Grauballe

Further Biochemical Characterization, Including the Detection of Surface Glycoproteins, of Human, Calf, and Simian Rotaviruses. **Suzanne M. Rodger,** Roger D. Schnagl, and Ian H. Holmes

Genome of Infectious Bronchitis Virus. **Béla Lomniczi** and Ian Kennedy

Characterization of a New Type of Human Papillomavirus That Causes Skin Warts. **Gérard Orth,** Michel Favre, and Odile Croissant

State of the Viral DNA in Rat Cells Transformed by Polyoma Virus. II. Identification of the Cells Containing Nonintegrated Viral DNA and the Effect of Viral Mutations. **Dimitris Louzias,** Ishwari Prasad, and Claudio Basilico

Evidence for Simian Virus 40 (SV40) Coding of SV40 T-Antigen and the SV40-Specific Proteins in HeLa Cells Infected with Nondefective Adenovirus Type 2-SV40 Hybrid Viruses. Kristine Mann, Tony Hunter, Gernot Walter,* and Hawley Linke

Virulence Factors of Influenza A Viruses: WSN Virus Neuraminidase Required for Plaque Production in MDBK Cells. **Jerome L. Schulman** and Peter Palese

Specific Binding Sites for a Parvovirus, Minute Virus of Mice, on Cultured Mouse Cells. **Paul Linser,** Helen Bruning, and R. W. Armentrout

Electron Microscopic Characterization of the Defectiveness of a Temperature-Sensitive Mutant of Moloney Murine Leukemia Virus Restricted in Assembly. P. H. Yuen and P. K. Y. Wong*

Anatomy of Herpes Simplex Virus DNA. IX. Apparent Exclusion of Some Parental DNA Arrangements in the Generation of Intertypic (HSV-1 × HSV-2) Recombinants. **Lawrence S. Morse,** Timothy G. Buchman, Bernard Roizman,* and Priscilla A. Schaffer

---

* Asterisk refers to person to whom inquiries regarding the paper should be addressed.
Human Cytomegalovirus Genome: Partial Denaturation Map and Organization of Genome Sequences. BILL A. KILPATRICK AND ENG-SHANG HUANG* 261

Physical and Genetic Characterization of Deletion Mutants of Simian Virus 40 Constructed In Vitro. CHARLES N. COLE, TERRY LANDERS, STEPHEN P. GOFF,* SIMONE MANTEUIL-BRUTLAG, AND PAUL BERG 277

Structure and Formation of Circular Dimers of Simian Virus 40 DNA. STEPHEN P. GOFF* AND PAUL BERG 295

[125I]deoxycytidine Used in a Rapid, Sensitive, and Specific Assay for Herpes Simplex Virus Type 1 Thymidine Kinase. WILLIAM C. SUMMERS* AND WILMA P. SUMMERS 314

Relationship Between the Methionine Tryptic Peptides of Simian Virus 40 and BK Virus Tumor Antigens. DANIEL T. SIMMONS,* KENNETH K. TAKEMOTO, AND MALCOLM A. MARTIN 319

Macromolecular Synthesis in Cells Infected by Frog Virus 3. VII. Transcriptional and Post-Transcriptional Regulation of Virus Gene Expression. D. B. WIL- LIS,* R. GOORHA, M. MILES, AND A. GRANOFF 326

Ultrastructural Studies of H-1 Parvovirus Replication. IV. Crystal Development and Structure with the Temperature-Sensitive Mutant ts1. IRWIN I. SINGER* AND SOLON L. RHODE III 343

Ultrastructural Studies of H-1 Parvovirus Replication. V. Immunocytochemical Demonstration of Separate Chromatin-Associated and Inclusion-Associated Antigens. IRWIN I. SINGER* AND SOLON L. RHODE III 353

Defective Friend Spleen Focus-Forming Virus: Interfering Properties and Isolation Free from Standard Leukemia-Inducing Helper Virus. ROBERT J. ECK- NER* AND KRISTINE L. HETTRICK 383

Bunyamwera Virus-Induced Polypeptide Synthesis. T. H. PENNINGTON,* C. R. PRINGLE, AND M. A. MCCRAE 397

Phosphorylated Protein Component Present in Influenza Virions. MARTIN L. PRIVALSKY AND EDWARD E. PENHOET* 401

Evidence of a Repetitive Sequence in Vaccinia Virus DNA. GUIDO PEDRALI-NOY AND ARTHUR WEISSBACH* 406

Advenovirus Type 12 DNA Sequences in Primary Hamster Tumors. K. C. LEE AND S. MAK* 408

Effect of Alkaline Protease on the Antigenic Nature of Wiseana Nuclear Polyhedrosis Virus Polyhedron Protein. A. M. CRAWFORD AND J. KALMAKOFF* 412

Temperature-Sensitive Mutants of Human Cytomegalovirus. KOICHI YAMANISHI AND FRED RAPP* 416

Bacterial Viruses

Properties of the Nonlethal Recombinational Repair x and y Mutants of Bacteriophage T4. II. DNA Synthesis. ROBERT J. MELAMEDE AND SUSAN S. WAL- LACE* 28

Localization of Minor Protein Components of the Head of Bacteriophage T4. LAURÉE MÜLLER-SALAMIN, LOUISE ONORATO, AND MICHAEL K. SHOWE* 121

Secondary Structure of RNA from Bacteriophages f2, Qβ, and PP7. THOMAS D. EDLIND AND ALAX R. BASSEL* 135

Role of the T5 Gene D15 Nuclease in the Generation of Nicked Bacteriophage T5 DNA. R. W. MOYER* AND C. T. RÖTHE 177

Bacteriophage PMB12 Conversion of the Sporulation Defect in RNA Polymerase Mutants of Bacillus subtilis. MICHAEL G. BRAMUCCI, KATHLEEN M. KEGGINS, AND PAUL S. LOVETT* 194
Properties of “Diplophage”: a Lipid-Containing Bacteriophage. Rubens Lopez, Concepcion Ronda, Alexander Tomasz,* and Antonio Portoles .......... 201

Physical Map of the Bacteriophage T5 Genome Based on the Cleavage Products of the Restriction Endonucleases SalI, Smal, Bam1, and HpaI. Nancy V. Hamlett, Brenda Lange-Gustafsson, and Marc Rhoades* .......... 249


Order of the Two Major Head Protein Genes of Bacteriophage φ29 of Bacillus subtilis. Rafael P. Mellado,* Enrique Méndez, Eladio Viñuela, and Margarita Salas .......... 378

Inactivation of Receptors for Bacteriophage T5 During Infection of Escherichia coli B. Glenda B. Dunn and Donna H. Duckworth* .......... 419

Volume 24 Contents for November 1977 Number 2

Animal Viruses

Enzymatic Properties of Viral Replication Complexes Isolated from Adenovirus Type 2-Infected HeLa Cell Nuclei. O. Brison, C. Kedinger,* and J. Wilhelm ................ ................................................................. 423

Isolation of the Viral DNA Replication Complex from Adeno-Associated Virus Type 1-Infected Cells. Hiroshi Handa and Hiroto Shimojo* .......... 444

Interaction of Simian Virus 40 Chromatin with Simian Virus 40 T-Antigen. Maria Persico-Dilauro, Robert G. Martin,* and David M. Livingston ........... 451

Inhibition of Viral DNA Synthesis in Stationary Chicken Embryo Fibroblasts Infected with Avian Retroviruses. Edward F. Fritsch and Howard M. Temin* .......... 461

Herpes Simplex Virus DNA Polymerase as the Site of Phosphonoacetate Sensitivity: Temperature-Sensitive Mutants. Dorothy J. M. Purifoy and Kenneth L. Powell* .......... 470

Interactions of Murine Leukemia Virus Core Components: Characterization of Reverse Transcriptase Packaged in the Absence of 70S Genomic RNA. Brenda I. Gerwin* and Judith G. Levin .......... 478

Characterization of RNA from Equine Infectious Anemia Virus. W. P. Cheever,* B. G. Archer, and T. B. Crawford ................ .................. 489

Measurement of Proviral Genes in Uninfected and Avian Myeloblastosis Virus-Infected Cells by Hybridization with 3H-Labeled Complementary DNA Probe Excess. L. J. Heilmann, T. M. Herman, and G. S. Beaudreau* .......... 498

Nucleotide Sequences Derived from Pheasant DNA in the Genome of Recombinant Avian Leukosis Viruses with Subgroup F Specificity. Eli Keshet and Howard M. Temin* .......... 505

Type-Specific Antigenic Determinnants on the Major External Glycoprotein of High- and Low-Oncogenic Murine Mammary Tumor Viruses. Y. A. Teramoto, D. Kupe, and J. Schlom* .......... 525

Recombination Between Endogenous and Exogenous Simian Virus 40 Genes. I. Rescue of a Simian Virus 40 Temperature-Sensitive Mutant by Passage in Permissive Transformed Monkey Lines. Y. Gluzman, E. L. Kupe, and E. Winocour* .......... 534
Recombination Between Endogenous and Exogenous Simian Virus 40 Genes. II. Biochemical Evidence for Genetic Exchange. T. Vogel, Y. Gluzman, and E. Winocour* .......................................................... 541


Physical Organization of Subgroup B Human Adenovirus Genomes. Clark Tibbetts .................................................................................................................................. 564

Persistent Infection of Cultured Mammalian Cells by Japanese Encephalitis Virus. Connie Schmaljohn and Carol D. Blair* ............................................................................. 580

Alterations of Neutral Glycolipids in Cells Infected with Syncytium-Producing Mutants of Herpes Simplex Virus Type 1. M. A. Ruhl and Stanley Person* .................................................. 602

RNase T1-Resistant Oligonucleotides of an N- and B-Tropic Murine Leukemia Virus of BALB/c: Evidence for Recombination Between These Viruses. Douglas V. Faller and Nancy Hopkins* ........................................................................................................ 609

Nonstructural Proteins of Herpes Simplex Virus. I. Purification of the Induced DNA Polymerase. Kenneth L. Powell* and Dorothy J. M. Purifoy ........................................... 618

Evidence for Two Nucleotide Sequence Orientations Within the Terminal Repetition of Adeno-Associated Virus DNA. Ilene S. Spear, Kenneth H. Fife, William W. Hauswirth, Carol J. Jones, and Kenneth I. Bern* .................................................... 627

Unique Peptide Maps of the Three Largest Proteins Specified by the Flavivirus Kunjin. Peter J. Wright,* D. Scott Bowden, and E. G. Westaway ........................................ 651

Comparisons of the Peptide Maps of Kunjin Virus Proteins Smaller than the Envelope Protein. Peter J. Wright* and E. G. Westaway ........................................... 662

RNase T1-Resistant Oligonucleotides of Akv-1 and Akv-2 Type C Viruses of AKR Mice. Jean Rommelaeere, Douglas V. Faller, and Nancy Hopkins* .................................................. 690

Measurements of the Genome Sizes of Simian Virus 40 and Polyoma Virus. Laurens Sopmayrac and Kathleen J. Danna* .......................................................... 695

BALB/3T3 Cells Infected by the ts3 Mutant of Polyoma Virus Fail to Accumulate Virus-Specific Early RNA at the Nonpermissive Temperature. Bill Cogen and Walter Eckhart* ........................................................................................................ 701

In Vitro Transcription of the Avian Retrovirus Genome by the α Form of the Viral RNA-Directed DNA Polymerase. Marc S. Collett, Duane P. Grandgenett, and Anthony J. Faras* ........................................................................... 704

Recombination Between Temperature-Sensitive Mutants of the Arenavirus Pichinde. Anne C. Vezza and David H. L. Bishop* .......................................................... 712

Bacterial Viruses

Distinctive Protein Requirements of Replication-Dependent and -Uncoupled Bacteriophage T4 Late Gene Expression. R. Wu and E. P. Geiduschek* .................. 436

Role of Potassium in the Synthesis and Decay of Two Specific Bacteriophage T4 Messages. Marcia L. Walsh, Paul S. Cohen, and Herbert L. Ennis* 514

Isolation and Mapping of t Gene Mutants of Bacteriophage T4D. Teresa Thiel* and Lazarus Atrashanch .......................................................... 518

In Vivo Functional Interaction Between DNA Polymerase and dCMP-Hydroxymethylase of Bacteriophage T4. Julie Chao, Myra Leach, and Jim Karam* ........................................................................................................ 557

Changes in the Capsid Structure and Stability of Defective Particles of Bacteriophage R17. Wallace J. Iglewski .......................................................... 590
CONTENTS

Properties of Deoxynucleoside 5'-Monophosphatase Induced by Bacteriophage T5 After Infection of Escherichia coli. T. J. MOZER and H. R. WARNER*........... 635

Isolation and Characterization of a Bacteriophage T5 Mutant Deficient in Deoxynucleoside 5'-Monophosphatase Activity. T. J. MOZER, R. B. THOMPSON, S. M. BERGET, and H. R. WARNER*........... 642


Evidence for Infection Lysogeny in Lactobacilli: Temperate Bacteriophages Within the Subgenus Streptobacterium. KARL 0. STETTER............. 685

Superinfection Exclusion by Bacteriophage T7. WILLIAM T. MCA LLISTER* and CORNELIA L. BARRETT.......................... 709

DNA Injection and Genetic Recombination of Alkylated Bacteriophage T7 in the Presence of Nalidixic Acid. BARBARA KARSKA-WYSOCKI,* MARGARET D. MAMET-BRATLEY, and GRZEGO RZ PRZEWLOCKI............ 716

Erratum

Location of the ss" Mutation of Bacteriophage T7 in Gene 10, the Structural Gene for the Major Capsid Protein. DAN VETTER, LINDA ROBERTS, JERRY B. JACKOWSKI, AND PAUL D. SADOWSKI............. 720

Volume 24 Contents for December 1977 Number 3

Animal Viruses

Temperature-Sensitive Growth Regulation in One Type of Transformed Rat Cells Induced by the tsq Mutant of Polyoma Virus. ROLAND SEIF and FRANCOIS CUZIN*................. 721


Genetic Relatedness of Equine Herpesvirus Types 1 and 3. GEORGE P. ALLEN, DENNIS J. O'CALLAGHAN, and CHARLES C. RANDALL*........... 761

Two Methyltransferase Activities in the Purified Virions of Vesicular Stomatitis Virus. DOUGLAS TESTA and AMIYA K. BANERJEE*....................... 786

Peptide Map Comparison of Infectious Pancreatic Necrosis Virus-Specific Polypeptides. PETER DOBOS* and DAVID ROWE............... 805

Polypeptides of the Surface Projections and the Ribonucleoprotein of Avian Infectious Bronchitis Virus. MALCOLM R. MACNAUGHTON,* M. HILARY MIDGE, HEATHER A. DAVIES, and ROBERT R. DOURMA SHKIN........... 821

Transcriptase Activity Associated with Rabies Virion. AKIHlKO KAWAI............. 826


Complex of Virus-Like Particles Containing Double-Stranded RNA from Thiella viopsis basicola. R. F. BOZARTH* and A. GOENAGA............. 846

Structural Protein Markers in the Avian Oncoviruses. CARL W. RETTENMIER* and HIDESABURO HANAFUSA..................... 850

Synthesis and Glycosylation of Polyprotein Precursors to the Internal Core Proteins of Friend Murine Leukemia Virus. LEONARD H. EVANS, STEVEN DRESLER, and DAVID KABAT*.............. 865


Formation of Recombinants Between Snowshoe Hare and La Crosse Bunyaviruses. J. Gentsch, L. R. Wynne, J. P. Clewley, R. E. Shope, and D. H. L. Bishop* ............................................................. 893

Uncoating and Gene Expression of Simian Virus 40 in CV-1 Cell Nuclei Inoculated by Microinjection. E. G. Diacumakos and E. L. Gershey* ................................................................. 903

Transient Association of Semliki Forest Virus Capsid Protein with Ribosomes. Hans Söderlund* and Ismo Ulmanen .......................................................... 907

Transformation-Defective Mutants of Rous Sarcoma Virus with src Gene Deletions of Varying Length. Sadaaki Kawai, Peter H. Duesberg, and Hidesaburo Hanafusa* .......................................................... 910

Bacterial Viruses

"Host Shutoff" Function of Bacteriophage T7: Involvement of T7 Gene 2 and Gene 0.7 in the Inactivation of Escherichia coli RNA Polymerase. Bruce A. Hesselbach and Dai Nakada* ........................................ 736

I Protein: Bacteriophage T7-Coded Inhibitor of Escherichia coli RNA Polymerase. Bruce A. Hesselbach and Dai Nakada* ........................................................ 746

DNA Replication in Bacteriophage-Infected Staphylococcus aureus. Michele H. Ubelaker and Eugene D. Rosenblum* ........................................ 768

Slow Switchover from Host RNA Synthesis to Bacteriophage RNA Synthesis After Infection of Escherichia coli with a T4 Mutant Defective in the Bacteriophage T4-Induced Unfolding of the Host Nucleoid. Michael A. Tigges, Claudia J. H. Bursch, and D. Peter Snustad* .................................................. 775

Suppression of Gene 49 Mutations of Bacteriophage T4 by a Second Mutation in Gene X: Structure of Pseudorevertant DNA. D. B. Shah* and Lisa DeLorenzo .......................................................... 794

Erratum

Fragmentation of Bacillus Bacteriophage φ105 DNA by Restriction Endonuclease EcoRI: Evidence for Complementary Single-Stranded DNA in the Cohesive Ends of the Molecule. Barbara M. Scher, Donald H. Dean, and Anthony J. Garro .......................................................... 915