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## BIOGRAPHICAL SKETCH

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NAME Cecilia Cheng-Mayer	POSITION TITLE Professor/Staff Investigator		
eRA COMMONS USER NAME (credential, e.g., agency login) CECILIA_CHENG_MAYER			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of California, Berkeley	A.B.	1972	Bacteriology
Columbia University, New York	Ph.D.	1978	Microbiology
Sloan-Kettering Institute for Cancer Research	Post-Doc	1981	Developmental Genetics

### A. Professional Experience:

1973-1974	Teaching Assistant in Medical Microbiology, Columbia University, New York
1975	Teaching Assistant in Infectious Disease, Columbia University, New York
1981-1982	Associate Researcher, Sloan-Kettering Institute for Cancer Research
1982-1985	Research Assistant, University of Miami School of Medicine, Miami
1985-1986	Research Scholar, University of California, San Francisco
1986-1989	Assistant Research Virologist, Cancer Research Institute UCSF School of Medicine
1990-1994	Associate Research Virologist, Cancer Research Institute UCSF School of Medicine
1994-Present	Staff Investigator, Aaron Diamond AIDS Research Center, New York
1996-2002	Aaron Diamond Associate Professor at the Rockefeller University, New York
2003-Present	Aaron Diamond Professor at the Rockefeller University, New York

### B. Publications (selected):

1. **Cheng-Mayer C**, Seto D, Tateno M and Levy JA. 1988. Biologic features of HIV that correlate with virulence in the host. *Science* 240: 80-82. (PMID: 2832945).
2. Shioda T, Levy JA and **Cheng-Mayer C**. 1991. Macrophage and T-cell line tropisms of HIV-1 are determined by specific regions of the envelope gp120. *Nature* 349: 167-69. (PMID: 1986308).
3. Shioda T, Levy JA, and **Cheng-Mayer C**. 1992. Small amino acid changes in the V3 hypervariable region of gp120 can affect the T-cell and macrophage tropism of human immunodeficiency virus type 1. *Proc Natl Acad Sci USA*, 89:9434-38. (PMID: 1409653).
4. Stamatatos L and **Cheng-Mayer C**. 1993. Evidence that the structural conformation of envelope gp120 affects HIV-1 infectivity, host range and syncytium-forming ability. *J Virol*. 67:5635-39. (PMID: 8350416).
5. Koito A, Harrowe G, Levy JA and **Cheng-Mayer C**. 1994. Functional role of the V1/V2 domain of human immunodeficiency virus type 1 envelope glycoprotein gp120 in infection of primary macrophages and soluble CD4 neutralization. *J Virol*, 68:2253-59. (PMID: 8139010).
6. Allan JS, Ray R, Broussard S, Whitehead E, Hubbard G, Butler T, Brasky K, Luciw P, **Cheng-Mayer C**, Levy JA, Steimer K, Li J, Sodroski J and Garcia-Moll, M. 1995. Infection of baboons with simian/human immunodeficiency viruses. *JAIDS* 9:429-41. (PMID: 7627620).
7. Luciw PA, Pratt-Lowe E, Shaw KES, Levy JA and **Cheng-Mayer C**. 1995. Persistent infection of rhesus macaques with T-cell line-tropic and macrophage-tropic clones of simian/human immunodeficiency viruses (SHIV). *Proc Natl Acad Sci* 92:7490-94. (PMID: 7638218).
8. Stamatatos L and **Cheng-Mayer C**. 1995. Structural modulations of the envelope gp120 glycoprotein of HIV-1 upon oligomerization and differential V3 loop-epitope exposure for isolates displaying distinct tropism upon virion-soluble receptor binding. *J Virol*, 69:6191-98. (PMID: 7545244).
9. Trkola A, Dragic T, Arthos J, Binley JM, Olson WC, Allaway GP, **Cheng-Mayer C**, Robinson J, Maddon PJ and Moore JP 1996. CD4-dependent, antibody-sensitive interactions between HIV-1 and its co-receptor CCR-5. *Nature* 384:184-7. (PMID: 8906796).
10. **Cheng-Mayer C**, Liu R, Landau NR and Stamatatos L. 1997. Macrophage tropism of HIV-1 and utilization of the CC-CKR5 coreceptor. *J Virol*, 71:1657-61. (PMID: 89956950).

11. Harouse JM, Tan RCH, Gettie A, Dailey P, Marx PA, Luciw PA and **Cheng-Mayer C**. 1998. Mucosal transmission of pathogenic CXCR4-utilizing SHIV<sub>SF33A</sub> variants in rhesus macaques. *Virology*, 248:95-107. (PMID: 9705259).
12. Stamatatos L and **Cheng-Mayer C**. 1998. An envelope modification that renders a primary, neutralization resistant, clade B HIV-1 isolate highly susceptible to neutralization by sera from other clades. *J Virol*, 72:7840-45. (PMID: 9733820).
13. Luciw PA, Mandell C, Himathongkham S, Li J, Low TA, Schmidt KA, Shaw KES and **Cheng-Mayer C**. 1999. Fatal immunopathogenesis by SIV/HIV-1 (SHIV) containing the HIV-1<sub>SF33</sub> env gene in juvenile and newborn rhesus macaques. *Virology*, 263:112-27. (PMID: 10544087).
14. **Cheng-Mayer C**, Brown A, Harouse J, Luciw PA and Mayer AJ. 1999. Selection for neutralization resistance of the SHIV<sub>SF33A</sub> variant in vivo by virtue of sequence changes in the extracellular envelope glycoprotein that modify N-linked glycosylation. *J Virol*, 73:5294-5300. (PMID: 10364275).
15. Harouse JM, Gettie A, Tan RCH, Blanchard J and **Cheng-Mayer C**. 1999. Distinct pathogenic sequela in rhesus macaques infected with CCR5 or CXCR4 utilizing SHIVs. *Science*, 284:816-19. (PMID: 10221916).
16. Brown A, Wang X, Sawai E and **Cheng-Mayer C**. 1999. Activation of the PAK-related kinase by HIV-1 Nef in primary human peripheral blood lymphocytes and macrophages leads to phosphorylation of a PIX/p95 complex. *J Virol*, 73:9899-907. (PMID: 10559302).
17. Chakrabarti LA, Lewin SR, Zhang L, Gettie A, Luckay A, Martin LN, Skulsky E, Ho DD, **Cheng-Mayer C**, Marx PA 2000. Normal T-cell turnover in Sooty Mangabeys harboring active simian immunodeficiency virus infection. *J Virol*, 74: 1209-23. (PMID: 10627531).
18. Chakrabarti L, Lewin SR, Zhang L, Gettie A, Luckay A, Martin LN, Skulsky E, Ho DD, **Cheng-Mayer C** and Marx PA. 2000. Age-dependent changes in T cell homeostasis and SIV load in sooty mangabeys. *J Med Primatol*, 29:158-65. (PMID: 11085578).
19. Harouse JM, Gettie A, Eshetu T, Tan RCH, Bohm R, Blanchard J, Baskin G and **Cheng-Mayer C**. 2001. Mucosal transmission and induction of simian AIDS by CCR5-specific SHIV<sub>SF162P</sub>. *J Virol*, 75:1990-95. (PMID: 11160699).
20. Malenbaum S, Yang D and **Cheng-Mayer C**. 2001. Evidence for similar recognition of the conserved neutralization epitopes of HIV-1 gp120 in humans and macaques. *J Virol*, 75:9287-96. (PMID: 11533191).
21. Parren PWHI, Marx PA, Hessel AJ, Luckay A, Harouse J, **Cheng-Mayer C**, Moore JP and Burton DR 2001. Antibody protects against macaques vaginal challenge with a pathogenic R5 simian/human immunodeficiency virus at serum levels giving complete neutralization in vitro. *J Virol*, 75:8340-47. (PMID: 11483779).
22. Chakrabarti L, Ivanovic T and **Cheng-Mayer C**. 2002. Properties of the surface envelope glycoprotein associated with virulence of Simian-Human Immunodeficiency virus SHIV<sub>SF33A</sub> molecular clones. *J Virol*, 76:1588-99. (PMID: 11799153).
23. Lue J, Hsu M, Yang D, Marx P, Chen Z and **Cheng-Mayer C**. 2002. Addition of a single gp120 glycan confers increased binding to dendritic cell-specific ICAM-3-grabbing nonintegrin and neutralization escape to HIV-1. *J Virol*, 76:10299-10306. (PMID: 12239306).
24. Hsu M, Harouse JM, Gettie A, Buckner C, Blanchard J and **Cheng-Mayer C**. 2003. Increased mucosal transmission but not enhanced pathogenicity of the CCR5-tropic, SAIDS-inducing SHIV<sub>SF162P3</sub> maps to envelope gp120. *J Virol*, 77:989-98. (PMID: 12502815).
25. Chakrabarti LA, Metzner KJ, Ivanovic T, Cheng H, Louis-Virelizier J, Connor RI and **Cheng-Mayer C**. 2003. A truncated form of Nef selected during pathogenic reversion of SIVmac239- $\Delta$ nef increases viral replication. *J Virol*, 77:1245-56. (PMID: 12502842).
26. Hsu M, Zhang J, Flint M, Logvinoff C, **Cheng-Mayer C**, Rice CM and McKeating J. 2003. Hepatitis C virus glycoproteins mediate pH-dependent fusion and cell entry of pseudotyped retroviral particles. *Proc Natl Acad Sci USA*, 100:7271-76. (PMID: 12761383).
27. Harouse JM, Buckner C, Gettie A, Fuller R, Bohm R, Blanchard J and **Cheng-Mayer C**. 2003. CD8+ T cell-mediated CXCR4-SHIV suppression in dually-infected rhesus macaques. *Proc Natl Acad Sci USA*, 100:10977-82. (PMID: 12963814).
28. Reyes RA, Canfield DR, Esser U, Adamson LA, **Cheng-Mayer C**, Gardner M, Harouse JM and Luciw PA. 2004. Induction of simian AIDS in infant rhesus macaques infected with CCR5 and CXCR4 utilizing SHIV is associated with distinct lesions of the thymus. *J Virol*, 78:2121-30. (PMID: 14747577)

29. Balfe P, Shapiro S, Hsu M, Buckner C, Harouse J and **Cheng-Mayer C**. 2004. Expansion of quasispecies diversity but no evidence for adaptive evolution of SHIV during rapid serial transfers between seronegative macaques. *Virology*, 318:267-79. (PMID: 14972553).
30. Brown A, Moghaddam S, Kawano T and **Cheng-Mayer C**. 2004. Multiple human immunodeficiency virus type 1 Nef functions contribute to efficient replication in primary human macrophages. *J Gen Virol*, 85:1463-69. (PMID: 15166429).
31. Saunders CJ, McCaffrey RA, Zharkikh I, Kraft Z, Malenbaum SE, Burke B, **Cheng-Mayer C** and Stamatatos L. 2005. The V1, V2, and V3 regions of the human immunodeficiency virus type 1 envelope differentially affect the viral phenotype in an isolate-dependent manner. *J Virol*, 79:9069-80. (PMID: 15994801).
32. Cheng H, Cenciarelli C, Nelkin G, Tsan R, Fan C, **Cheng-Mayer C** and Fidler IJ. 2005. Molecular mechanism of hTid-1, the human homolog of Drosophila tumor suppressor I(2)Tid, in the regulation of NF-kappaB activity and suppression of tumor growth. *Mol Cell Biol*, 25:44-59. (PMID: 15601829).
33. Brown A, Gartner S, Kawano T, Benoit N and **Cheng-Mayer C**. 2005. HLA-A2 down-regulation on primary human macrophages infected with an M-tropic EGFP-tagged HIV-1 reporter virus. *J Leukoc Biol*, 78:675-85. (PMID: 16000390).
34. Ratterree M, Gettie A, Williams V, Malenbaum S, Neurath AR, **Cheng-Mayer C** and Blanchard J. 2005. Safety and distribution of cellulose acetate 1,2-benzenedicarboxylate (CAP), a candidate anti-HIV microbicide in rhesus macaques. *AIDS*, 19:1595-1599. (PMID: 16184028).
35. Hsu M, Ho SH, Balfe P, Gettie A, Harouse J, Blanchard J and **Cheng-Mayer C**. 2005. A CCR5-tropic simian-HIV molecular clone capable of inducing AIDS in rhesus macaques. *J Acquir Immune Defic Syndr* 40:383-87. (PMID: 16280691).
36. Ho SH, Shek L, Gettie A, Blanchard J and **Cheng-Mayer C**. 2005. V3 loop-determined coreceptor preference dictates the dynamics of CD4+T-cell loss in simian-human immunodeficiency virus-infected macaques. *J Virol*, 79:12296-303. (PMID: 16160156).
37. Boadi T, Schneider E, Chung S, Tsai L, Gettie A, Ratterree M, Blanchard J, Neurath AR and **Cheng-Mayer C**. 2005. Cellulose acetate 1,2-benzenedicarboxylate protects against challenge with pathogenic X4 and R5 simian/human immunodeficiency virus. *AIDS* 19:1587-94. (PMID: 16184028).
38. Trunova N, Tsai L, Tung S, Schneider E, Harouse J, Gettie A, Simon V, Blanchard J and **Cheng-Mayer C**. 2006. Progestin-based contraceptive suppresses cellular immune responses in SHIV-infected rhesus macaques. *Virology*, 352:169-77. (PMID: 16730772).
39. Ho SH, Martin F, Higginbottom A, Partridge LJ, Parthasarathy V, Moseley GW, Lopez P, **Cheng-Mayer C** and Monk PN. 2006. Recombinant extracellular domains of tetraspanin proteins are potent inhibitors of the infection of macrophages by human immunodeficiency virus type 1. *J Virol*, 80:6487-96. (PMID: 16775336).
40. Tsai L, Trunova N, Gettie A, Mohri H, Bohm R, Saifuddin M and **Cheng-Mayer C**. 2007. Efficient repeated low-dose intravaginal infection with X4 and R5 SHIVs in rhesus macaques: implications for HIV-1 transmission in humans. *Virology* 362:207-216. (PMID: 17258783).
41. Ho SH, Tasca S, Shek L, Li A, Gettie A, Blanchard J, Boden D, and **Cheng-Mayer C**. 2007. Coreceptor switch in R5 SHIV infected macaque. *J Virol*, 81: 8621-8633. (PMID: 17537860).
42. Tasca S, Tsai L, Trunova N, Gettie A, Saifuddin M, Bohm R, Chakrabarti L and **Cheng-Mayer C**. 2007. Induction of potent local cellular immunity with low dose X4 SHIV<sub>SF33A</sub> vaginal exposure. *Virology* 367:196-211. (PMID: 17574643).
43. Ho SH, Trunova N, Gettie A, Blanchard J and **Cheng-Mayer C**. 2008. Different mutational pathways to CXCR4 coreceptor switch of CCR5-using Simian-Human Immunodeficiency Virus. *J Virol*, 82: 5653-5656. (PMID: 18385246).
44. Tasca S, Ho SH and Cheng-Mayer C. R5X4 viruses are evolutionary, functional, and antigenic intermediates in the pathway of a simian-human immunodeficiency virus coreceptor switch. *J Virol*, 82: 7089-99. (PMID: 18480460).

## C. Research Grants

### Ongoing Research Support

5 R01 AI069991-02 (Cheng-Mayer)  
NIH/NIAD

04/01/07 – 03/31/11

*Assessment of vaccine/microbicide combination efficacy in the macaque model*

The major goal of this project is to determine whether there is synergy between vaccination and topical microbicides in conferring protection against vaginal SHIV infection in RM.

Role: PI

5 R37 AI041945-12 (Cheng-Mayer) 08/01/97 – 05/31/11

NIH/NIAID

*Phenotypic and Genetic Determinants of SHIV Pathogenesis*

The major goal of this project is to establish the *in vitro* correlates of X4- and R5-pathogenic SHIVs *in vivo*.

Role: PI

5 R01 AI046980-09 (Cheng-Mayer) 03/01/00 – 02/28/10

NIH/NIAD

*Transmission and Pathogenesis of X4 and R5 SHIVs*

The major goal of this project is to establish the compartmentalization and pathogenic outcome of X4 and R5 SHIV infections and to examine whether R5 SHIV is preferentially transmitted.

Role: PI

5 U19 AI076964-04 (Jiang) 09/30/04 – 08/31/09

NYBC/NIH

*In vivo Safety and Efficacy of CAP and Combination Films*

The major goal of this project is to assess the safety and efficacy of CAP and Combination Films in an animal model.

Role: Leader

5 R21/R33 AI071967-02 (Cheng-Mayer) R21: 09/15/2006 – 08/31/2008

NIH/NIAID

*Engineering Simian-derived Lactobacilli to Secrete Anti-HIV-1 Microbicides*

The overall goal of this proposal is to use genetically engineered lactobacilli to secrete anti HIV microbicides in order to prevent HIV-1 transmission.

Role: PI

### **Completed Research Support**

R01 CA72822 (Cheng-Mayer) 04/01/90 – 03/31/06

NIH/NCI

*Structure/Function Relationship of HIV-1*

The major goal of this project is to identify a form of Env antigen that is most likely to evoke broadly reactive neutralizing antibodies and to compare the antigenicity and immunogenicity of Env in humans and macaques.

Role: PI

P01 HD41761 (Neurath) 09/26/01 – 07/31/06 (No cost extension)

NYBC/NIH

*Anti-HIV Microbicide: Cellulose Acetate Phthalate (CAP)*

The major goal of this project is to assess the safety and efficacy of CAP in an animal model.

Role: Project Leader

MSA-03-362 (Cheng-Mayer) 10/01/03 – 02/29/08

CONRAD/USAID

*Refinement of the SHIV/macaque model for use in assessing efficacy of candidate microbicides*

The major goal of this project is to develop a repeated low-dose X4/R5 SHIV challenge model in rhesus macaque for assessment of candidate microbicides.

Role: PI