

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
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| NAME Julian Leibowitz, M.D.Ph.D. | POSITION TITLE Professor of Microbial and Molecular Pathogenesis | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------|---------------------------|
| eRA COMMONS USER NAME JLeibowitz | | | |
| 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 |
| Alfred University, Alfred, NY | B.A. | 1964-1968 | Chemistry |
| Albert Einstein College of Medicine, Bronx, NY | Ph.D. | 1970-1975 | Cell Biology |
| Albert Einstein College of Medicine, Bronx, NY | M.D. | 1968-1975 | Medicine |
| University of California, San Diego, CA | | 1975-1977 | Intern/Resident Pathology |
| University of California, San Diego, CA | | 1977-1979 | Exptl Neuropathology |

Please refer to the application instructions in order to complete sections A, B, and C of the Biographical Sketch.

A. Positions and Honors. List in chronological order previous positions, concluding with your present position. List any honors. Include present membership on any Federal Government public advisory committee.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE:

1970-75 Medical Scientist Trainee, Albert Einstein College of Medicine, N.Y.
1975-77. University of California, San Diego, Department of Pathology, Intern and Resident
1977-79. University of California, San Diego, USPHS Trainee and Post-doctoral Fellow in Neuropathology
1979-83. Assistant Professor of Pathology in Residence, University of California, San Diego
1983-95 Assistant Professor, Associate Professor, Professor of Pathology and Laboratory Medicine, University of Texas Medical School-Houston
1995-2005 Professor of Pathology and Laboratory Medicine, Texas A&M University System College of Medicine
2006-present Professor of Microbial and Molecular Pathogenesis, Texas A&M University System College of Medicine
1998-present Professor of Veterinary Pathobiology, Texas A&M University

HONORS AND AWARDS:

Eta Mu Alpha, College Honor Society
New York State Regents Medical School Scholarship
Teacher Investigator Award NS-00418 of the USPHS, 1979-84
Elected to the Pluto Club (Association of University Pathologists), 1991

B. Selected peer-reviewed publications (in chronological order from 89). Do not include publications submitted or in preparation

- Oleszak, EL, and Leibowitz, JL: Immunoglobulin Fc binding activity is associated with the mouse hepatitis virus E2 peplomer protein. *Virology* 176:70-80, 1990.
- Oleszak, EL, Perlman, S, and Leibowitz, JL: MHV S peplomer protein expressed by a recombinant vaccinia virus vector exhibits IgG Fc-receptor activity. *Virology* 186:122-132, 1992.
- Oleszak, EL, Kuzmak, J, Hogue, B, Parr, R, Collisson, EW, Rodkey, LS, and Leibowitz, JL: Molecular mimicry between Fc receptor and S peplomer protein of MHV, BCV, and TGEV. *Hybridoma* 14:1-8, 1995.
- Yu, W, and Leibowitz, JL: Specific binding of host cellular proteins to multiple sites within the 3' end of mouse hepatitis virus genomic RNA. *J. Virol.* 69:5033-5038, 1995.
- Yu, W, and Leibowitz, JL: A conserved motif at the 3' end of mouse hepatitis virus genomic RNA required for host protein binding and viral RNA replication. *Virology* 214:128-138, 1995.
- Fingerote, RJ, Abecassis, Phillips, MJ, Rao, YS, Cole, EH, Leibowitz, JL, and Levy, GA: Loss of resistance to murine hepatitis virus strain 3 (MHV-3) infection following treatment with corticosteroids is associated with induction of macrophage procoagulant activity (PCA). *J. Virol.* 70:4275-4282, 1996.
- Liu, Q, Yu, W, and Leibowitz, JL: A specific host cellular protein binding element near the 3' end of mouse hepatitis virus genomic RNA. *Virology* 232:74-85, 1997.
- Ding, JW, Ning, Q, Liu, MF, Lai, A, Leibowitz, J, Peltekian, KM, Cole, EH, Fung, LS, Holloway, C, Marsden, PA, Yeager, H, Phillips, MJ, and Levy, GA: Fulminant hepatic failure in murine hepatitis virus strain 3 infection: tissue-specific expression of a novel fgl2 prothrombinase. *J. Virol.* 71:9223-9230, 1997.
- Drescher, KM, Nguyen, LT, Coenen, MJ, Leibowitz, JL, Hammerling, GJ, Strauss, G, David, CS, and Rodriguez, M: Expression of human HLA-DR3 transgene reduces the severity of demyelination in a murine model of multiple sclerosis. *J. Clin. Invest.* 101:1765-1774, 1998.
- Stalcup, RP, Baric, RS, and Leibowitz, JL: Genetic complementation amongst three panels of mouse hepatitis virus gene 1 mutants. *Virology* 241:112-121, 1998.
- Belyavskiy, M, Belyavskaya, B, Levy, GA, and Leibowitz, JL: Coronavirus MHV-3 induced apoptosis in macrophages. *Virology* 250:41-49, 1998.

12. Murray, P, McGavern, D.B., Lin, X, Njenga, MK, Leibowitz, J, Pease, LR, and Rodriguez, M: Perforin-dependent neurologic injury in a viral model of multiple sclerosis. *J. Neurosci.* 18:7306-7314, 1998.
13. Bi, W, Piñón, JD, Hughes, S, Bonilla, PJ, Holmes, KV, Weiss, SR, and Leibowitz, JL: Localization of mouse hepatitis virus open reading frame 1a derived proteins. *J. Neurovirol.* 4:594-605, 1998.
14. Murray, PD, Pavelko, KD, Leibowitz, J, Lin, X, and Rodriguez M: CD4(+) and CD8(+) T cells make discrete contributions to demyelination and neurologic disease in a viral model of multiple sclerosis. *J. Virol.* 72:7320-7329, 1998.
15. Ninq, Q, Liu, M, Lai, MM, Marsden, PA, Cole, E, Tseng, J, Pereira, B, Belyavskiy, M, Leibowitz, JL, Phillips, MJ, and Levy, GA: The nucleocapsid protein of murine hepatitis virus type 3 induces transcription of the novel fgl2 prothrombinase gene. *J. Biol. Chem.* 274:9930-9936, 1999.
16. An, S, Chen, C-J, Yu, X, Leibowitz, JL, and Makino, S: Induction of apoptosis in murine coronavirus-infected cultured cells and demonstration of E protein as an apoptosis inducer. *J. Virol.* 73:7853-7859, 1999.
17. Levy, GA, Liu, MF, Ding, JW, Yuwaraj, S, Leibowitz, JL, Marsden, PA, Ning, Q, Kovalinka, A, and Phillips, MJ: A molecular basis for fulminant viral hepatitis. *Amer. J. Pathol.* 156:1217-1225, 2000.
18. Anderson, R, Harting, E, Frey, MS, Leibowitz, JL, Miranda, RC: Theiler's murine encephalomyelitis virus induces rapid necrosis and delayed apoptosis in myelinated mouse cerebellar explant cultures. *Brain Res.*, 868:259-267, 2000.
19. Nanda, SK and Leibowitz, JL: Mitochondrial aconitase binds to the 3'-untranslated region of the mouse hepatitis virus genome. *J. Virol.* 75:3352-3362, 2001.
20. Liu, Q, Johnson, RF, and Leibowitz, JL: Secondary structural elements within the 3' untranslated region of mouse hepatitis virus strain JHM genomic RNA. *J. Virol.* 75:12105-12113, 2001.
21. Chan CW, Chan MW, Liu M, Fung L, Cole EH, Leibowitz JL, Marsden PA, Clark DA, and Levy, GA: Kinetic analysis of a unique direct prothrombinase, fgl2, and identification of a serine residue critical for the prothrombinase activity. *J. Immunol.* 168:5170-5177, 2002.
22. Liu, M, Leibowitz, JL, Clark, DA, Mendicino, M, Ning, Q, Ding, JW, D'Abreo, C, Fung, L, Marsden, PA, and Levy, GA: Gene Transcription of fgl2 in endothelial cells is controlled by ETS-1 and Oct 1 and requires the presence of both Sp1 and Sp3. *Eur. J. Biochem.* 270:1-13, 2003.
23. Nanda, SK, Johnson, RF, Liu, Q, and Leibowitz, JL: Mitochondrial HSP70, and HSP60 bind to the 3' untranslated region of the mouse hepatitis virus genome. *Arch. Virol.*, 149:93-111, 2004.
24. Youn, S, Leibowitz, JL, and Collisson, EW: In vitro assembled, recombinant infectious bronchitis viruses demonstrate that the 5a open reading frame is not essential for replication. *Virology* 332:206-215, 2005.
25. Johnson, RF, Feng, M, Liu, P, Millership, JJ, Yount, B, Baric, RS, Leibowitz, JL: The effect of mutations in the mouse hepatitis virus 3'(+)-42 protein binding element on RNA replication. *J. Virol.*, 79:14570-14585, 2005.
26. Liu, P, Millership, JJ, Li, L, Giedroc, DP, and Leibowitz, JL: A previously unrecognized UNR stem-loop structure in the coronavirus 5' untranslated region plays a functional role in replication. *Adv. Exp. Med. Biol.* 581:25-30, 2006
27. Kang, H, Feng, M, Schroeder, ME, Giedroc, DP, and Leibowitz, JL: Stem-loop 1 in the 5' UTR of the SARS coronavirus can substitute for its counterpart in mouse hepatitis virus. *Adv. Exp. Med. Biol.* 581:105-108, 2006.
28. DeAlbuquerque, N, Baig, S, Ma, M, Shalev, I, Phillips, MJ, Liu, MF, Habal, M, Leibowitz, JL, McGilvray, ID, Butany, J, Fish, E, Levy, G: Murine Hepatitis Virus Strain 1 as a Model for Severe Acute Respiratory Distress Syndrome (SARS). *Adv. Exp. Med. Biol.* 581:376-378, 2006.
29. De Albuquerque, N, Baig, E, Xuezhong Ma, X, Zhang, J, He, J, Rowe, A, Habal, M, Liu M, Shale, I, Downey, GP, Gorczynski, R, Butany, J, Leibowitz, J, Weiss, SR, McGilvray, ID, Phillips, JM, Fish, EN, and Levy, GA: Murine Hepatitis Virus Strain 1 (MHV-1) Produces a Clinically Relevant Model of SARS in A/J Mice. *J. Virol.* 80:10382-10394, 2006.
30. Kang, K, Feng, M, Schroeder, ME, Giedroc, DP, and Leibowitz, JL: Putative cis-acting stem-loops in the 5' untranslated region of the severe acute respiratory syndrome coronavirus can substitute for their MHV counterparts. *J. Virol.* 80:10600-10614, 2006.
31. Liu, P, Li, L, Millership, JJ, Kang, H, Giedroc, DP, and Leibowitz, JL: A U-turn motif-containing stem-loop in the coronavirus 5' untranslated region plays a functional role in replication. *RNA* 13: 763-780, 2007.

C. Research Support. List selected ongoing or completed (during the last three years) research projects (federal and non-federal support). Begin with the projects that are most relevant to the research proposed in this application. Briefly indicate the overall goals of the projects and responsibilities of principal investigator identified above.

ONGOING RESEARCH SUPPORT:

- 7/1/03-12/31/07 NIH, Interaction of MHV RNA with mtHSP70 and m-aconitase. Leibowitz (PI)
- 9/1/03-8/31/08 NIH, Mechanistic studies at the host-pathogen interface. Role: Co-Investigator, D. McMurray, PI.

COMPLETED RESEARCH SUPPORT:

- 11/1/98 – 7/1/04 Stearman Family Pilot Grant, Texas A&M College of Medicine Programmed cell death in two mouse models of multiple sclerosis. Leibowitz (PI)
- 9/1/03-8/31/04 Texas A&M University Life Sciences Task Force. Development of materials for controlled release strategies in medicine and agriculture. Role: Co-Investigator, A. Ficht, PI.
- 6/1/98 – 4/30/05 NIH, Short-term training students in Health Professional Schools. J.L. Leibowitz PI
- 4/1/02 – 3/31/07 NIH, Stress effects on an animal model of autoimmune disease. Collaborating Investigator, C.J. Welsh, PI.