Stanford



# Claude M. Nagamine, DVM, PhD

Associate Professor of Comparative Medicine

## Bio

### BIO

Claude M. Nagamine, DVM, PhD Associate Professor received his D.V.M. from the University of Tennessee in 2004 and completed his residency training in Laboratory Animal Medicine at the Massachusetts Institute of Technology in 2007. He joined the Department of Comparative Medicine at Stanford in 2008. Prior to entering veterinary school, Dr. Nagamine obtained a Ph.D. in Ecology from the University of California, Davis (1979), obtained postdoctoral training in endocrinology, developmental genetics, immunology, and molecular biology of the mouse at the Memorial Sloan-Kettering Cancer Center (NYC), Institut Pasteur (France), and the Howard Hughes Medical Institute at the University of California, San Francisco and was an Assistant Professor of Cell Biology at the Vanderbilt University School of Medicine. His research focuses on using mouse models to study murine and human infectious diseases. These colloborative studies include dengue virus, zika virus, adeno-associated virus, coxsackie virus, enterovirus 71, enterohepatic helicobacters, campylobacters, and anaplasma.

### ACADEMIC APPOINTMENTS

- Associate Prof-Univ Med Line, Comparative Medicine
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

### PROFESSIONAL EDUCATION

- D.V.M., University of Tennessee , Veterinary Medicine (2004)
- Ph.D., University of California, Davis , Ecology (1979)
- M.A., University of California, Davis , Zoology (1975)
- B.S., University of Hawaii, Manoa , Biology (1973)

## Research & Scholarship

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Mouse models to study murine and human infectious diseases. These colloborative studies include dengue virus, zika virus, adeno-associated virus, coxsackie virus, enterovirus 71, enterohepatic helicobacters, campylobacters, and anaplasma.

## Teaching

### COURSES

**2024-25**

- Laboratory Animal Medicine Seminar: COMPMED 209 (Aut)
- Laboratory Mouse in Biomedical Research: COMPMED 87Q (Aut)

**2023-24**

- Laboratory Animal Medicine Seminar: COMPMED 209 (Aut, Win, Spr)

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Laboratory Animal Science (Masters Program)

## Publications

### PUBLICATIONS

- **Strain-resolved metagenomic analysis and qPCR validation suggest Clostridium cuniculi is the etiologic agent for infectious diarrhea in severely immunodeficient mice.** *Journal of veterinary diagnostic investigation : official publication of the American Association of Veterinary Laboratory Diagnosticians, Inc*

  Barouch-Bentov, R., Merrill, B. D., Reineking, W., Moorhead, R., Herberg de Alonso, F., Fazel, M., Uzal, F. A., Felt, S. A., Sonnenburg, J. L., Casey, K. M., Nagamine, C. M.

  2025: 10406387251378688

- **Clostridium cuniculi is associated with chronic high-morbidity low-mortality diarrhea in NSG and NSG-related mouse strains.** *Veterinary pathology*

  Casey, K. M., Barouch-Bentov, R., Reineking, W., Alonso, F. H., Moorhead, R., Fazel, M., Armien, A. G., Uzal, F. A., Chanin, R. B., Bhatt, A. S., Green, S. L., Felt, S. A., Nagamine, et al

  2025: 3009858251372565

- **MFSD6 is an entry receptor for enterovirus D68.** *Nature*

  Varanese, L., Xu, L., Peters, C. E., Pintilie, G., Roberts, D. S., Raj, S., Liu, M., Ooi, Y. S., Diep, J., Qiao, W., Richards, C. M., Callaway, J., Bertozzi, et al

  2025

- **Assessing the Efficacy of Topical Fluralaner for the Treatment of Demodex musculi Infestations in NSG Mice (Mus musculus)** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*

  Morrill, C., Vilches-Moure, J., Garner, J. P., Cotton, R. M., Barouch-Bentov, R., de Alonso, F., Nagamine, C. M.

  2025; 64 (2): 219-227

- **Analgesic Efficacy of Oral Carprofen-Treated Gel and Tablets for an Incisional Pain Model in NSG Mice** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*

  Alamaw, E. D., Tien, K., Zhang, M., Ge, Y., Gorman, G., Nagamine, C. M., Jampachaisri, K., Ray, R. R., Pacharinsak, C., Huss, M. K.

  2025; 64 (2): 228-240

- **Studies of C57BL/6J Mice Deficient in Receptors for IFNα/β and IFNγ as a Model for EV-D68 Acute Flaccid Myelitis** *COMPARATIVE MEDICINE*

  Watarastaporn, T., Song, W., Glenn, J. S., Ooi, Y., Carette, J. E., Nagamine, C. M.

  2024; 74 (6): 392-398

- **Characterization of Effect of Enterovirus D68 in 129/Sv Mice Deficient in IFN-alpha/beta and/or IFN-gamma Receptors.** *Comparative medicine*

  Song, W., Watarastaporn, T., Ooi, Y. S., Nguyen, K., Glenn, J. S., Carette, J. E., Casey, K. M., Nagamine, C. M.

  2024

- **Carprofen Attenuates Postoperative Mechanical and Thermal Hypersensitivity after Plantar Incision in Immunodeficient NSG Mice.** *Comparative medicine*

  Alamaw, E. D., Casey, K. M., Tien, K., Franco, B. D., Gorman, G., Cotton, R. M., Nagamine, C., Jampachaisri, K., Sharp, P., Pacharinsak, C., Huss, M. K.

  2024

- **Epizootic of enterocolitis and clostridial overgrowth in NSG and NSG-related mouse strains.** *Veterinary pathology*

  Arthur, J. D., Mullen, J. L., Uzal, F. A., Nagamine, C. M., Casey, K. M.

2023: 3009858231217197

- **Hardwiring tissue-specific AAV transduction in mice through engineered receptor expression.** *Nature methods*
  Zengel, J., Wang, Y. X., Seo, J. W., Ning, K., Hamilton, J. N., Wu, B., Raie, M., Holbrook, C., Su, S., Clements, D. R., Pillay, S., Puschnik, A. S., Winslow, et al
  2023

- **Variant enterovirus A71 found in immune-suppressed patient binds to heparan sulfate and exhibits neurotropism in B-cell-depleted mice.** *Cell reports*
  Weng, K., Tee, H. K., Tseligka, E. D., Cagno, V., Mathez, G., Rosset, S., Nagamine, C. M., Sarnow, P., Kirkegaard, K., Tapparel, C.
  2023; 42 (4): 112389

- **The human disease gene LYSET is essential for lysosomal enzyme transport and viral infection.** *Science (New York, N.Y.)*
  Richards, C. M., Jabs, S., Qiao, W., Varanese, L. D., Schweizer, M., Mosen, P. R., Riley, N. M., Klüssendorf, M., Zengel, J. R., Flynn, R. A., Rustagi, A., Widen, J. C., Peters, et al
  2022: eabn5648

- **Efficacy of 3 Buprenorphine Formulations for the Attenuation of Hypersensitivity after Plantar Incision in Immunodeficient NSG Mice.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
  Arthur, J. D., Alamaw, E. D., Jampachairsri, K., Sharp, P., Nagamine, C. M., Huss, M. K., Pacharinsak, C.
  2022

- **A Targeted Computational Screen of the SWEETLEAD Database Reveals FDA-Approved Compounds with Anti-Dengue Viral Activity.** *mBio*
  Moshiri, J., Constant, D. A., Liu, B., Mateo, R., Kearnes, S., Novick, P., Prasad, R., Nagamine, C., Pande, V., Kirkegaard, K.
  2020; 11 (6)

- **Hardwiring Tissue-Specific AAV Transduction in Mice Through Engineered AAVR Expression**
  Zengel, J., Puschnik, A. S., Pillay, S., Nagamine, C. M., Carette, J. E.
  CELL PRESS.2020: 253

- **Hamsters and Gerbils** *EXOTIC ANIMAL LABORATORY DIAGNOSIS*
  McKeon, G. P., Nagamine, C. M., Felt, S. A.
  edited by Heatley, J. J., Russell, K. E.
  2020: 113-128

- **SETD3 is an actin histidine methyltransferase that prevents primary dystocia** *NATURE*
  Wilkinson, A. W., Diep, J., Dai, S., Liu, S., Ooi, Y., Song, D., Li, T., Horton, J. R., Zhang, X., Liu, C., Trivedi, D. V., Ruppel, K. M., Vilches-Moure, et al
  2019; 565 (7739): 372-+

- **Enterovirus pathogenesis requires the host methyltransferase SETD3.** *Nature microbiology*
  Diep, J. n., Ooi, Y. S., Wilkinson, A. W., Peters, C. E., Foy, E. n., Johnson, J. R., Zengel, J. n., Ding, S. n., Weng, K. F., Laufman, O. n., Jang, G. n., Xu, J. n., Young, et al
  2019

- **Targeting intramolecular proteinase NS2B/3 cleavages for trans-dominant inhibition of dengue virus** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Constant, D. A., Mateo, R., Nagamine, C. M., Kirkegaard, K.
  2018; 115 (40): 10136–41

- **Identification and Characterization of an Alternate, AAVR Independent, AAV Entry Mechanism Using a Genome-Wide CRISPR/Cas9 Knock-Out Screen**
  Dudek, A. M., Zinn, E. M., Pillay, S., Puschnik, A. S., Nagamine, C. M., Cheng, F., Qiu, J., Carette, J. E., Vandenberghe, L. H.
  CELL PRESS.2018: 323

- **Delayed Onset and Altered Biodistribution of a Non-Canonical AAV Entry Pathway**
  Dudek, A. M., Pillay, S., Puschnik, A. S., Nagamine, C. M., Carette, J. E., Vandenberghe, L. H.
  CELL PRESS.2018: 188

- **Feasibility and biological rationale of repurposing sunitinib and erlotinib for dengue treatment.** *Antiviral research*
  Pu, S. Y., Xiao, F. n., Schor, S. n., Bekerman, E. n., Zanini, F. n., Barouch-Bentov, R. n., Nagamine, C. M., Einav, S. n.
  2018; 155: 67–75

- **SETD3 is an actin histidine methyltransferase that prevents primary dystocia.** *Nature*
  Wilkinson, A. W., Diep, J. n., Dai, S. n., Liu, S. n., Ooi, Y. S., Song, D. n., Li, T. M., Horton, J. R., Zhang, X. n., Liu, C. n., Trivedi, D. V., Ruppel, K. M., Vilches-Moure, et al
  2018

- **An alternate route for adeno-associated virus entry independent of AAVR.** *Journal of virology*
  Dudek, A. M., Pillay, S. n., Puschnik, A. S., Nagamine, C. M., Cheng, F. n., Qiu, J. n., Carette, J. E., Vandenberghe, L. H.
  2018

- **Animal Models of Zika Virus** *COMPARATIVE MEDICINE*
  Bradley, M. P., Nagamine, C. M.
  2017; 67 (3): 242–52

- **Anticancer kinase inhibitors impair intracellular viral trafficking and exert broad-spectrum antiviral effects** *JOURNAL OF CLINICAL INVESTIGATION*
  Bekerman, E., Neveu, G., Shulla, A., Brannan, J., Pu, S., Wang, S., Xiao, F., Barouch-Bentov, R., Bakken, R. R., Mateo, R., Govero, J., Nagamine, C. M., Diamond, et al
  2017; 127 (4): 1338-1352

- **Influence of Genetic Background on Hematologic and Histopathologic Alterations during Acute Granulocytic Anaplasmosis in 129/SvEv and C57BL/6J Mice Lacking Type I and Type II Interferon Signaling** *COMPARATIVE MEDICINE*
  Johns, J. L., Discipulo, M. L., Koehne, A. L., Moorhead, K. A., Nagamine, C. M.
  2017; 67 (2): 127-137

- **Development of Novel ImmunoPET Tracers to Image Human PD-1 Checkpoint Expression on Tumor-Infiltrating Lymphocytes in a Humanized Mouse Model.** *Molecular imaging and biology*
  Natarajan, A., Mayer, A. T., Reeves, R. E., Nagamine, C. M., Gambhir, S. S.
  2017

- **Evaluation of Isoflurane Overdose for Euthanasia of Neonatal Mice** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*
  Seymour, T. L., Nagamine, C. M.
  2016; 55 (3): 321-323

- **Discovery of an Essential Receptor for Adeno-Associated Virus Infection**
  Pillay, S., Meyer, N. L., Puschnik, A. S., Davulco, O., Diep, J., Ishikawa, Y., Jae, L. T., Wosen, J. E., Nagamine, C. M., Chapman, M. S., Carette, J. E.
  NATURE PUBLISHING GROUP.2016: S118

- **An Essential and Ubiquitous Protein Receptor for AAV; Glycans as Attachment Receptors**
  Meyer, N. L., Pillay, S., Xie, Q., Davulcu, O., Puschnik, A., Diep, J., Ishikawa, Y., Jae, L., Wosen, J., Nagamine, C., Noble, A., Stagg, S., Carette, et al
  NATURE PUBLISHING GROUP.2016: S189

- **An essential receptor for adeno-associated virus infection.** *Nature*
  Pillay, S., Meyer, N. L., Puschnik, A. S., Davulcu, O., Diep, J., Ishikawa, Y., Jae, L. T., Wosen, J. E., Nagamine, C. M., Chapman, M. S., Carette, J. E.
  2016; 530 (7588): 108-112

- **Suppression of Drug Resistance in Dengue Virus.** *mBio*
  Mateo, R., Nagamine, C. M., Kirkegaard, K.
  2015; 6 (6): e01960-15

- **Suppression of Drug Resistance in Dengue Virus** *MBIO*
  Mateo, R., Nagamine, C. M., Kirkegaard, K.
  2015; 6 (6)

- **Co-infection of the Siberian hamster (Phodopus sungorus) with a novel Helicobacter sp and Campylobacter sp.** *JOURNAL OF MEDICAL MICROBIOLOGY*
  Nagamine, C. M., Shen, Z., Luong, R. H., McKeon, G. P., Ruby, N. F., Fox, J. G.
  2015; 64: 575-581

- **Co-infection of the Siberian hamster (Phodopus sungorus) with a novel Helicobacter sp. and Campylobacter sp.** *Journal of medical microbiology*

Nagamine, C. M., Shen, Z., Luong, R. H., McKeon, G. P., Ruby, N. F., Fox, J. G.
2015; 64 (Pt 5): 575-81

- **Evaluation of Zr-89-rituximab Tracer by Cerenkov Luminescence Imaging and Correlation with PET in a Humanized Transgenic Mouse Model to Image NHL** *MOLECULAR IMAGING AND BIOLOGY*
  Natarajan, A., Habte, F., Liu, H., Sathirachinda, A., Hu, X., Cheng, Z., Nagamine, C. M., Gambhir, S. S.
  2013; 15 (4): 468-475

- **Inhibition of Cellular Autophagy Deranges Dengue Virion Maturation** *JOURNAL OF VIROLOGY*
  Mateo, R., Nagamine, C. M., Spagnolo, J., Mendez, E., Rahe, M., Gale, M., Yuan, J., Kirkegaard, K.
  2013; 87 (3): 1312-1321

- **Maternal antibodies or nonproductive infections confound the need for rederivation.** *Journal of the American Association for Laboratory Animal Science*
  Nagamine, C. M., Chen, L., Ho, W. Q., Felt, S. A.
  2013; 52 (4): 495-498

- **Carbon Dioxide and Oxygen Levels in Disposable Individually Ventilated Cages after Removal from Mechanical Ventilation** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*
  Nagamine, C. M., Long, C. T., McKeon, G. P., Felt, S. A.
  2012; 51 (2): 155-161

- **Interleukin-16 deficiency suppresses the development of chronic rejection in murine cardiac transplantation model** *JOURNAL OF HEART AND LUNG TRANSPLANTATION*
  Kimura, N., Itoh, S., Nakae, S., Axtell, R. C., Velotta, J. B., Bos, E. J., Merk, D. R., Gong, Y., Okamura, H., Nagamine, C. M., Adachi, H., Kornfeld, H., Robbins, et al
  2011; 30 (12): 1409-1417

- **Hematologic, Serologic, and Histologic Profile of Aged Siberian Hamsters (Phodopus sungorus)** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*
  McKeon, G. P., Nagamine, C. M., Ruby, N. F., Luong, R. H.
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- **Helicobacter hepaticus promotes azoxymethane-initiated colon tumorigenesis in BALB/cJ-IL10-deficient mice.** *Int J Cancer*
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- **Proliferative pododermatitis (canker) with intralesional spirochetes in three horses.** *J Vet Diagn Invest*
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- **Acute paraplegia in a young adult Long-Evans rat resulting from T-cell lymphoma.** *Contemp Topics Lab Anim Sci*
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- **Sex Reversal Caused by Mus musculus domesticus Y Chromosomes Linked to Variant Expression of the Testis-Determining Gene Sry** *Dev. Biol.*
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- **Ovotestes in B6-XXSxr sex reversed mice.** *Dev. Biol.*
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  Nagamine CM, Carlisle C
  1997; 43: 397-398

- **Absence of correlation between Sry polymorphisms and XY sex reversal caused by M. m. domesticus Y Chromosome.** *Genomics*
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- **The dominant white spotting oncogene allele Kit(W-42J) exacerbates XY(DOM) sex reversal.** *Development*
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- **Polymorphism of a CAG trinucleotide repeat within Sry correlates with B6.YDom sex reversal.** *Nature Genetics*
  Coward P, Nagai K, Chen D, Thomas HD, Nagamine CM, Lau Y-FC
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- **Distribution of the molossinus allele of Sry, the testis-determining gene, in wild mice.** *Molecular Biology and Evolution*
  Nagamine CM, Shiroishi T, Miyashita N, Tsuchiya K, Ikeda H, Takao N, Wu X-L, Jin M-L, Wang F-S, Kryukov AP, Akbar
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  Guénet J-L, Nagamine CM, Simon-Chazottes D, Montagutelli X, Bonhomme F
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- **The two candidate testis-determining Y genes (Zfy-1, Zfy-2) are differentially expressed in fetal and adult mouse tissues.** *Genes Develop*
  Nagamine CM, Chan K, Hake LE, Lau Y-FC
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- **Development and fertility of ovaries in the B6.YDom sex-reversed female mouse.** *Development*
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- **Chromosome mapping and expression of a putative testis-determining gene in mouse.** *Science*
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- **A PCR artifact: generation of heteroduplexes.** *Am J Hum Genet*
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- **Morphological development of the gonad in tda-1 XY sex reversal.** *Differentiation*
  Nagamine CM, Taketo T, Koo GC
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- **Linkage of the murine steroid sulfatase locus, Sts, to sex reversal, Sxr: a genetic and molecular analysis.** *Nucl Acid Res*
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- **Induction of female breeding characteristics by ovarian tissue implants in androgenic gland ablated male freshwater prawns Macrobrachium rosenbergii (de Man)(Decapoda, Palaemonidae).** *Int J Invert Reprod Devel*
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- **Masculinization of female crayfish, Procambarus clarki (Girard), by androgenic gland implantation.** *Int J Invert Reprod Devel*
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- **The use of specific DNA probes to analyze the Sxr mutation in the mouse.** *Development*
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  Nagamine C, Knight A, Maggenti A , Paxman G
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