Nicole E. (Vantuno) Wagner

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OBJECTIVE

Experienced Laboratory Technician seeking a position with managerial duties. Offering extensive experience with DNA and RNA isolation and purification, Sanger and Next Generation sequencing, PCR, qPCR, and laboratory maintenance. Excellent written, verbal, and organizational skills. Desire to contribute by teaching and training students and lab members.

EDUCATION

2005 M.S. Microbiology, Seton Hall University, South Orange, NJ.
Thesis: Interferon Resistance and Efficiency of HCV Replicon Establishment in Huh7 Cells Expressing Simian Virus 5 V Protein.

1994 B.S. Microbiology, Cornell University, College of Agriculture & Life Sciences, Ithaca, NY. Dean's List, seven semesters; Golden Key Honor Society; Gamma Delta Honor Society; Alpha Zeta Fraternity/Honor Society.

LABORATORY / RESEARCH EXPERIENCE

5/2013 – present: Rutgers University, New Brunswick, NJ

Principal Laboratory Technician, SEBS Center for Vector Biology 1/2020 – Guide, train, and mentor undergraduate students, graduate students, postdocs, and faculty in advanced molecular biology lab techniques, protocols, and operation of highly specialized capital instrumentation. Advise colleagues at every level of experimental design; assist in conceptualization of competitive funding proposals. Ensure lab spaces and personnel are conforming to current safety standards; assist with the generation and updating of laboratory SOPs. Coordinate maintenance and repair of laboratory equipment and facilities. Maintain mosquito colonies in perpetuity. Design and perform quantitative (qPCR) pathogen detection assays. Curate data, document work, prepare reports and verbiage for peer reviewed research manuscript publication using various computer software packages including Microsoft Word, Excel, and Powerpoint.

Laboratory Researcher, SEBS Genome Cooperative 5/2013 – 12/2019 Support and perform basic independent research work in molecular biology and genomics. Responsible for all aspects of genomic and transcriptome sequencing, including DNA and RNA extraction, library preparation, quality control, operation, and maintenance of Illumina MiSeq genome sequencing instrumentation. Lead training of other lab members in the use of these specialized tools for genome research. Order all reagents and consumables. Teach Next Generation Sequencing unit in Fundamentals of Genomics undergraduate course.

10/1996-10/2005: Schering-Plough Research Institute, Kenilworth, NJ

Associate Scientist, Antiviral Therapeutics, 10/2000 - 10/2005 In addition to previous responsibilities, generate stable-expression cell lines. Develop, optimize, and perform various high-throughput screening assays for HIV-1 targets. Titer virus stocks in plaque assays and $TCID_{50}$ assays. Work with HIV-1 virus in BSL-3 laboratory. Budget for and set up department-wide blanket PO#s for orders.

Assistant Scientist, Antiviral Therapeutics, 10/1996 - 10/2000 Optimize and perform assays to identify inhibitors of the CCR5 and the CXCR4 co-receptors for HIV-1 cell fusion/entry. Develop, optimize, and perform various high-throughput screening assays for Hepatitis C Virus (HCV) targets. Subclone, mutate, sequence, and express genes for recombinant and native proteins in tissue culture, *E. coli* and cell-free systems. Assay expressed proteins for activity. Collaborate with Natural Products, Chemistry, and Structural Chemistry groups on various projects.

- *Four Schering Excellence Awards for contributions to the HCV-NS3 Proteinase Task Force (12/1996), the HIV CCR5 and CXCR4 antagonist projects (11/1998 and 9/1999 respectively), and the *in vitro* T7-HCV replication system (3/2003)
- *Schering-Plough Shining Performance Award (9/2004) in appreciation for contributions to the HCV Entry program.
- *Schering-Plough Stock Option Award (2/2000) for contributions to the Antiviral Therapeutics Department
- *Schering Plough President's Award 2000 for contributions to the CCR5 Antagonist Program

8/1996 – 10/1996: **Sandoz Research Institute, East Hanover, NJ (Temporary, Kelly Services)**

Assistant Scientist, Department of Oncology Develop, optimize, and perform assays to screen for inhibitors of cellular signal transduction pathways implicated in oncogenesis. Overexpress and purify recombinant fusion proteins from *E. coli* and utilize in high throughput protein:protein ELISAs. Study protein:protein interactions in real time with Pharmacia BIAcore biosensor. Screen pure compounds, natural products, and combinatorial chemical libraries with Beckman Biomek SL Robotic systems.

8/1994 – 7/1996: **Princeton University, Princeton, NJ**

Laboratory Manager/Technician Played a key role in the characterization of the Myc nuclear oncogene and its binding co-factor TR-AP. Maintained and employed several continuous mammalian tissue culture cell lines. Extracted and assessed integrity of preparations of total cellular RNA by Northern blot analysis. Responsible for organizing and maintaining lab stocks, consumables, and equipment. Experienced in a variety of DNA cloning techniques, dideoxy terminator sequencing, electrophoretic mobility shift assays (EMSA), cell protein extractions and purifications, Western blot analyses, and recombinant baculovirus protein expression.

1/1994 – 5/1994: **Cornell University, Ithaca, NY**

Teaching Assistant Instructed students in proper techniques for general microbiology labs, including aseptic techniques, Gram staining, serial dilutions, microscope use, and identification of bacteria. Explained current scientific knowledge and theories to the students. Graded students' laboratory notebooks. Was evaluated positively by students and professor at the end of the semester.

PUBLICATIONS

Egizi, A.M., **Wagner, N.**, Jordan, R.A., and Price, D.C. (2023) Lone star ticks (Acari: Ixodidae) infected with Bourbon virus in New Jersey, USA. *J Med Ent* **doi:** https://doi/org/10.1093/jme/tjad052

Aardema, M.L., Campana, M.G., **Wagner, N.E.**, Ferreira, F.C., and Fonseca, D.M. (2022) A gene-based capture assay for surveying patterns of genetic diversity and insecticide resistance in a worldwide group of invasive mosquitoes. *PLoS Negl Trop Dis* 16(8): e0010689. **doi:** https://doi.org/10.1371/journal.pntd.0010689.

Ferreira. F.C., Videvall, E., Seidl, C.M., **Wagner, N.E**., Kilpatrick, A.M., Fleischer, R.C., and Fonseca, D.M. (2022) Transcriptional response of individual Hawaiian Culex quinquefasciatus mosquitoes to the avian malaria parasite Plasmodium relictum. *bioRxiv* **doi:** https://doi.org/10.1101/2022.02.10.479890

Price, D.C., Brennan, J.R., **Wagner, N.**, and Egizi, A.M. (2021) Comparative hologenomics of two Ixodes scapularis tick populations in New Jersey. *PeerJ* **doi:** https://doi.org/10.7717/peerj.12313

Bindell, M., Luo, J., Walsh, E., **Wagner, N.E.**, Miller, S.J., Cai, G., Bonos, S.A., and Zhang, N. (2021) Arbuscular mycorrhizal fungal communities associated with switchgrass (*Panicum virgatum* L.) in the acidic, oligotrophic pine barrens ecosystem. *Grass Research* **1**: 2.

Price, D.C., Goodenough, U.W., Roth, R., Lee, J-H., Kariyawasam, T., Mutwil, M., Ferrari, C., Fachinelli, F., Ball, S.G., Cenci, U., Chan, C.X., **Wagner, N.E.**, Yoon, H.S., Weber, A.P.M., and Bhattacharya, D. (2019) Analysis of an improved *Cyanophora paradoxa* genome assembly. *DNA Research* **26**: 287-299.

Shumaker, A., Putnam, H.M., Qiu, H., Price, D.C., Zelzion, E., Harel, A., **Wagner, N.E.**, Gates, R.D., Yoon, H.S., and Bhattacharya, D. (2019) Genome analysis of the rice coral *Montipora capitata*. *Scientific Reports* **9**: 2571.

Qiu, H., Zelzion, E., Putnam, H.M., Gates, R.D., **Wagner, N.E.**, Adams, D.K., and Bhattacharya, D. (2017) Discovery of SCORs: Anciently derived, highly conserved gene-associated repeats in stony corals. *Genomics*. **109**: 383-390.

Putnam, H.M., Adams, D.K., Zelzion, E., **Wagner, N.E.**, Qiu ,H., Mass, T., Falkowski, P.G., Gates, R.D., and Bhattacharya, D. (2017) Divergent evolutionary histories of DNA markers in a Hawaiian population of the coral *Montipora capitata*. *PeerJ.* **5**: e3319.

Honig, J.A., Zelzion, E., **Wagner, N.E.**, Kubik, C., Averello, V., Vaiciunas, J., Bhattacharya, D., Bonos, S.A., and Meyer, W.A. (2017) Microsatellite Identification in Perennial Ryegrass using Next-Generation Sequencing. *Crop Sci*. **57**: S331-S340.

Price, D.C., Farinholt, N., Gates, C., Shumaker, A., **Wagner, N.E.**, Bienfang, P. and Bhattacharya, D. (2016) Analysis of Gambierdiscus transcriptome data supports ancient origins of mixotrophic pathways in dinoflagellates. *Environ. Microbiol.* **18**: 4501-4510.

Bhattacharya, D., Agrawal, S., Aranda, M., Baumgarten, S., Belcaid, M., Drake, J.L., Erwin, D., Foret, S., Gates, R.D., Gruber, D.F., Kamel, B., Lesser, M.P., Levy, O., Liew, Y.J., MacManes, M., Mass, T., Medina, M., Mehr, S., Meyer, E., Price, D.C., Putnam, H.M., Qiu, H., Shinzato, C., Shoguchi, E., Stokes, A.J., Tambutté, S., Tchernov, D., Voolstra, C.R., **Wagner, N.**, Walker, C.W., Weber, A.P.M., Weis, V., Zelzion, E., Zoccola, D., and Falkowski, P.G. (2016) Comparative genomics explains the evolutionary success of reef-forming corals. *eLife* **5**:e13288.

Luo, J., Qui, H., Cai, G., **Wagner, N.E.**, Bhattacharya, D., and Zhang, N. (2015) Phylogenomic analysis uncovers the evolutionary history of nutrition and infection mode in rice blast fungus and other Magnaporthales. *Scientific Reports* **5**: 9448.

Buontempo, P.J., Jubin, R.G., Buontempo, C.A., **Wagner, N.E.**, Reyes, G.R., and Baroudy, B.M. (2006) Antiviral Activity of Transiently Expressed Interferon kappa is Cell Associated. *J Interferon Cytokine Res*. **26:** 40-52.

Palani, A., Shapiro, S., Clader, J.W., Greenlee, W.J., Blythin, D., Cox, K., **Wagner, N.E.**, Strizki, J., Baroudy, B.M., and Dan, N. (2003) Biological Evaluation and Interconversion Studies of Rotamers of SCH 351125, an Orally Bioavailable CCR5 Antagonist. *Bioorg. Med. Chem. Lett*. **13:** 705-708.

Hegde, V.R., Chan, T-M., Pu, H., Gullo, V.P., Patel, M.G., Das, P., **Wagner, N.**, Parameswaran, P.S., and Naik, C.G. (2002) Two Selective Novel Triterpene Glycosides from Sea Cucumber, *Telenata Ananas*: Inhibitors of Chemokine Receptor-5. *Bioorg. Med. Chem. Lett*. **12:** 3203-3205.

Strizki, J.M., Xu, S., **Wagner, N.E.**, Wojcik, L., Liu, J., Hou, Y., Endres, M., Palani, A., Shapiro, S., Clader, J.W., Greenlee, W.J., Tagat, J.R., McCombie, S., Cox, K., Fawzi, A.B., Chuan-Chu Chou, C-C., Pugliese-Sivo, C., Davies, L., Moreno, M.E., Ho, D.D., Trkola, A., Stoddart, C.A., Moore, J.P., Reyes, G.R., and Baroudy. B.M. (2001) SCH-C (SCH 351125), an orally bioavailable, small molecule antagonist of the chemokine receptor CCR5, is a potent inhibitor of HIV-1 infection *in vitro* and *in vivo*. *PNAS* **98:**12718-12723.

Tagat, J.R., Steensma, R.W., McCombie, S.W., Nazareno, D.V., Lin, S-I., Neustadt, B.R., Cox, K., Xu, S., Wojcik, L., Murray, M.G., **Vantuno, N.**, Baroudy, B.M., and Julie M. Strizki. J.M. (2001) Piperazine-Based CCR5 Antagonists as HIV-1 Inhibitors. II: Discovery of 1-[(2,4-Dimethyl-3-pyridinyl)carbonyl]-4-methyl-4-[3(*S*)-methyl-4-[1(*S*)-[4-(trifluoro-methyl)phenyl]ethyl]-1-piperazinyl]-piperidine *N*1-Oxide (Sch-350634), an Orally Bioavailable, Potent CCR5 Antagonist. *J. Med. Chem*. **44:**3343-3346.

Tagat, J.R., McCombie, S.W., Steensma, R.W., Lin, S-I., Nazareno, D.V., Baroudy, B., **Vantuno, N.**, Xu, S., and Liu, J. (2001) Piperazine-Based CCR5 Antagonists as HIV-1 Inhibitors. I: 2(*S*)-Methyl Piperazine as a Key Pharmacophore Element. *Bioorg. Med. Chem. Lett*. **11:**2143-2146.

Jubin, R., **Vantuno, N.E.**, Kieft, J.S., Murray, M.G., Doudna, J.A., Lau, J.Y.N., and Baroudy, B.M. (2000) Hepatitis C Virus Internal Ribosome Entry Site Stem Loop IIId Contains a Phylogenetically Conserved GGG Triplet Essential for Translation and IRES Folding. *J. Virol*. **74:**10430-10437.

ABSTRACTS

Ogert, R.A., **Wagner, N.**, Buontempo, C., Howe, J., Wilson, C., Strizki, J., Reyes, G.R., Ralston, R., and Baroudy, B.M. (2004) T7-promoter driven expression of a full-length HCV genotype 1a infectious clone in hepatoma-derived cell lines using a recombinant adenovirus expressing T7 polymerase. The American Society for Virology 23rd Annual Meeting. July 10-14.

Buontempo, P.J., Jubin, R., Buontempo, C., **Wagner, N.E.**, Reyes, G.R., and Baroudy, B.M. (2003) Interferon kappa exerts antiviral activity by a novel cell-associated mechanism. Interscience Conference on Antimicrobial Agents and Chemotherapy. September 14-17.

Jubin, R., Kieft, J.S., **Vantuno, N.**, Murray, M.G., Doudna, J.A., Lau, J.Y.N., and Baroudy, B.M. (2000) Hepatitis C Virus Internal Ribosome Entry Site Stem Loop IIId Contains a Phylogenetically Conserved GGG Triplet Essential for In Vitro and In Vivo Translation and IRES Folding. Translational Control Meeting at Cold Spring Harbor. September 6-9.

Jubin, R., **Vantuno, N.**, Lau, J.Y.N. and Murray, M.G. (1998) The GGG triplet within the apical loop of domain IIId is critical for translational activity of Hepatitis C Virus IRES. Translational Control meeting at Cold Spring Harbor. September 15-18.

Jubin, R., Smith, E.B., **Vantuno, N.**, and Murray, M.G. (1998) Inhibition of the Hepatitis C Virus (HCV) IRES by morpholino antisense oligonucleotides in an *in vitro* dual luciferase assay system. 17th annual American Society for Virology meeting. July 11-15.

INTERESTS AND ACTIVITIES

Scouts BSA (Boy Scouts of America): Cub Scout Den Leader 2014-2019 (Milltown Pack 33), Boy Scout Troop Treasurer 2020-present (East Brunswick Troop 132). District Award of Merit 2019. Order of the Arrow – Ordeal Member 2021. Extensive experience teaching outdoor and life skills to youth using the EDGE Method (Explain – Demonstrate – Guide – Enable).

Spotswood HS Band Parents Association: 2022-present. Currently serving as Vice President. Responsible for fundraising, coordinating with the band director, chaperoning the annual band trip, and filling in for absent executive board members at meetings.

Vadha Kempo Karate: 2018-present. Current rank Brown Belt. Mixed Martial Arts, with emphasis on connections of Body, Mind, and Spirit.

Hand Bell Choir: Started ringing hand bells in high school, currently ringing with the First Presbyterian Church at Metuchen. Enjoy both group ringing and solo ringing (as many as 25 bells).

Knitting: Self-taught in high school. Great for relaxing as well as keeping my hands nimble for lab work. Enjoy learning new techniques. Winner of many ribbons at the Middlesex County Fair, including two Best Of Show ribbons (2019 and 2022).