

# Hilary Gonzalez Morrison

Senior Scientist  
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## Education and Postdoctoral Training

B. A. *magna cum laude*, Biology, Harvard University, 1981  
Ph.D., Yale University, New Haven, CT, Department of Epidemiology and Public Health, 1987  
advisor Dennis L. Knudson. NSF predoctoral fellowship award.  
Field of Study: Infectious Disease Epidemiology (Virology).  
Dissertation: The Genetic Relatedness of Orbiviruses.  
Postdoctoral Fellow, Centers for Disease Control, Special Pathogens Branch, Atlanta GA, 1987-1989  
Advisor David D. Auperin. NRC postdoctoral research award. Research Activities: Development of recombinant vaccinia virus vaccine for Lassa fever virus.  
Postdoctoral Fellow, Harvard University Medical School, Boston MA, 1989-1992  
Advisor Ronald C. Desrosiers. Research activities: Genetic determinants of simian immunodeficiency virus infectivity.  
Postdoctoral Fellow, Woods Hole Oceanographic Institution, Woods Hole MA, 1993-1995  
Advisor, John J. Stegeman. NRSA postdoctoral fellowship award.  
Research Activities: Characterization of teleost P454 genes.

## Professional Positions (chronological order)

Research Associate, Marine Biological Laboratory, Woods Hole MA, 1995-1996  
Research Activities: Molecular evolution of P450, actins, and ribosomal RNAs  
Visiting Scientist, Marine Biological Laboratory, Woods Hole MA, 1996-1998  
Assistant Research Scientist, Marine Biological Laboratory, Woods Hole MA, 1998-2005  
Research Activities: Molecular and genomic evolution in eukaryotes (*Giardia lamblia*, *Nosema locustae* genome projects, protist cDNA survey)  
Associate Research Scientist, Marine Biological Laboratory, Woods Hole MA, 2005-2011  
Senior Research Scientist, Marine Biological Laboratory, Woods Hole MA, 2011-2015  
Senior Scientist, Marine Biological Laboratory, Woods Hole MA, 2015-present

## Honors and Awards

Elizabeth Cary Agassiz Scholar, Radcliffe College, 1981  
Phi Beta Kappa, Iota of Massachusetts, Radcliffe College, 1981

## Invited Talks

III International Giardia and Cryptosporidium Conference, 2009

## Service on National Committees and Institutional Boards

None

## Service on MBL committees

Safety Committee, Recycle, Reduce and Reuse Committee, Research Services Committee,  
Director's Council

## Editorial Boards

Peer J

## Teaching

MBL Advances in Genomics and Bioinformatics special topics course, 2002-2005  
MBL STAMPS special topics course, 2011-2017

## Funding:

### a. Current and Past 10 Years (reverse chronological order)

NIH 1UG3OD023275-01 Environmental influences on Child Health Outcomes (ECHO) Program  
CoPI (Karagas) A Prospective Study Of Critical Environmental Exposures In Formative Early Life  
09/21/16 – 08/31/18 That Impact Lifelong Health In Rural Us Children: The New Hampshire Birth Cohort Study

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NIH Renewal CoPI (McLellan) 07/01/16 - 06/30/18	Microbial Community Profiles Identify New Indicators of Waterborne Pathogens
NSF DEB-1442106 (Morrison) 11/01/14-10/31/17	Collaborative Research: Dimensions: The Macroalgal Microbiome in Space and Time---PI Maintaining Primary Producers in the Atlantic Rocky Intertidal Zone
<b>Completed:</b>	
Bay and Paul Fndn 103849 - (Sogin) 12/15/13 - 12/14/16	Diversity and functional capacity of dynamic microbes in human health
ExxonMobil Contract - (Sogin) 08/28/13-02/01/16	ExxonMobil Upstream Research
NIH 5R01GM095390-04 Co-PI (Graf) 12/01/10-11/30/12	Functional Analysis of a Digestive-Tract Microbiome During Dietary Changes
NIH PAR-09-241 - (Grainger) 07/01/10-06/30/12	Development of a TILLING Resource for the Xenopus Research Community
Fish and Wildlife Co-PI (Akiyoshi) 10/01/10-09/30/11	A Transcriptome Approach to Study the Host-Pathogen Interactions in WNS
NIH UH3DK083993 - (Young) 08/01/10-07/31/13	The Role of the Gut Microbiota in Ulcerative Colitis
NSF Co-PI (Sogin) 09/01/10-08/31/12	MRI Acquisition of an Illumina GAIIX for Genomics and Microbial Ecology
NSF OCE-0911031 - (Stegeman) 06/01/09-05/31/11	Woods Hole Center for Oceans and Human Health
NIH UH2DK083993 - (Young) 06/24/09-07/31/10	The Role of the Gut Microbiota in Ulcerative Colitis
EPA RFQ-OH-08-00012 - (Sogin) 03/07/08-03/06/09	Pyrosequencing of Metagenomic DNA and PCR Products
Alfred P. Sloan Fndn - (Sogin) 07/01/08-12/31/10	The Rare Biosphere and the Human Habitat
NIH HHSN2662004037C 2 - (Roos) 07/19/07-06/29/09	Bioinformatics Res Ctrs for Biodefense and Emerging/Re-emerging Infectious Disease
NSF DEB-0717155 Co-PI (Hobbie) 07/01/07-06/31/09	Fertilization of Salt Marsh Ecosystems
W.M. Keck Foundation - (Sogin) 07/01/07-09/15/09	Microbial Population Structures

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### Patents

None

### Training Record

None

### Publications: (reverse chronological order)

#### Original Research in Peer-Reviewed Journals, including submitted articles

1. Lee, STM, SA Kahn, TO Delmont, A Shaiber, ÖC Esen, NA Hubert, **HG Morrison**, DA Antonopoulos, DT Rubin, and AM Eren. *Tracking microbial colonization in fecal microbiota transplantation experiments via genome-resolved metagenomics*. Microbiome. 2017 May 4;5(1):50. doi: 10.1186/s40168-017-0270-x. **5418705**.
2. Vineis, JH, DL Ringus, **HG Morrison**, TO Delmont, S Dalal, LH Raffals, DA Antonopoulos, DT Rubin, AM Eren, EB Chang, and ML Sogin. *Patient-Specific Bacteroides Genome Variants in Pouchitis*. Mbio 2016, Nov 15;7(6). pii: e01713-16. doi: 10.1128/mBio.01713-16. **5111406**.
3. Topcuoğlu, BD, LC Stewart, **HG Morrison**, DA Butterfield, JA Huber, and JF Holden. *Hydrogen Limitation and Syntrophic Growth Among Natural Assemblages of Thermophilic Methanogens at Deep-sea Hydrothermal Vents*. Front Microbiol 2016. Aug 5;7:1240. doi: 10.3389/fmicb.2016.01240. eCollection 2016. **4974244**.
4. Hogan, DA, SD Willger, EL Dolben, TH Hampton, BA Stanton, **HG Morrison**, ML Sogin, J Czum, and A Ashare. *Analysis of Lung Microbiota in Bronchoalveolar Lavage, Protected Brush and Sputum Samples from Subjects with Mild-To-Moderate Cystic Fibrosis Lung Disease*. PloS One 2016 Mar 4;11(3): e0149998. doi: 10.1371/journal.pone.0149998. **4778801**.
5. Madan, JC, AG Hoen, SN Lundgren, SF Farzan, KL Cottingham, **HG Morrison**, ML Sogin, H Li, JH Moore and MR Karagas. *Association of Cesarean delivery and formula supplementation on the intestinal microbiome of six-week old infants*. JAMA Pediatr. 2016 Mar 1; 170(3): 212–219. doi: 10.1001/jamapediatrics.2015.3732. **4783194**.
6. Fisher JC, AM Eren, HC Green, OC Shanks, **HG Morrison**, JH Vineis, ML Sogin and SL McLellan (2015). *Comparison of sewage and animal fecal microbiomes by using oligotyping reveals Potential human fecal indicators in multiple taxonomic groups*. Appl Environ Microbiol. 81(20):7023-33. doi: 10.1128/AEM.01524-15. Epub 2015 Jul 31. **4579428**
7. Eren AM, ÖC Esen, C Quince, JH Vineis, **HG Morrison**, ML Sogin and TO Delmont. (2015). *Anvi'o: an advanced analysis and visualization platform for 'omics data*. PeerJ. Oct 8;3:e1319. doi: 10.7717/peerj.1319. eCollection 2015. **4614810**.
8. Bowen JL, D Weisman, M Yasuda, A Jayakumar, **HG Morrison** and BB Ward (2015). *Marine oxygen deficient zones harbor depauperate denitrifying communities compared to novel genetic diversity in coastal sediments*. Microb Ecol. 70(2):311-21. PMID: 25721726. PMCID: **n/a**
9. Hoen AG, J Li, LA Moulton, GA O'Toole, ML Housman, DC Koestler, MF Guill, JH Moore, PL Hibberd, **HG Morrison**, ML Sogin, MR Karagas and JC Madan (2015). *Associations between gut microbial colonization in early life and respiratory outcomes in cystic fibrosis*. The Journal of Pediatrics. **4674690**.
10. Newton RJ, SL Mclellan, DK Dila, JH Vineis, **HG Morrison**, AM Eren and ML Sogin (2015). *Sewage reflects the microbiomes of human populations*. mBio 6(2):e02574. **4358014**.
11. Eren AM, ML Sogin, **HG Morrison**, JH Vineis, JC Fisher, RJ Newton and SL McLellan (2015). *A single genus in the gut microbiome reflects host preference and specificity*. ISME J 9(1): 90-100. **4274434**.
12. Celaj S, MW Gleeson, J Deng, GA O'Toole, TH Hampton, MF Toft, **HG Morrison**, ML Sogin, J Putra, AA Suriawinata and JD Gorham (2014). *The microbiota regulates susceptibility to FAS-mediated acute hepatic injury*. Lab Invest 94(9): 938-949. **4152405**.
13. Chernikova DA, DC Koestler, AG Hoen, ML Housman, PL Hibberd, JH Moore, **HG Morrison**, ML Sogin, M Zain-Ul-Abideen and JC Madan (2014). *Fetal exposures and perinatal influences on the stool microbiota of premature infants*. J Matern Fetal Neonatal Med: 1-7. **4476945**.
14. Eren AM, **HG Morrison**, PJ Lescault, J Reveillaud, JH Vineis and ML Sogin (2014a). *Minimum entropy decomposition: Unsupervised oligotyping for sensitive partitioning of high-throughput marker gene sequences*. ISME J. **4817710**.
15. Eren AM, **HG Morrison**, SM Huse and ML Sogin (2014b). *DRISEE overestimates errors in metagenomic sequencing data*. Brief Bioinform 15(5): 783-787. **4171678**.
16. Hampton TH, DM Green, GR Cutting, **HG Morrison**, ML Sogin, AH Gifford, BA Stanton and GA O'Toole (2014). *The microbiome in pediatric cystic fibrosis patients: The role of shared environment suggests a window of intervention*. Microbiome 2: 14. **4113139**.
17. Huse SM, VB Young, **HG Morrison**, DA Antonopoulos, J Kwon, S Dalal, R Arrieta, NA Hubert, L Shen, JH Vineis, JC Koval, ML Sogin, EB Chang and LE Raffals (2014a). *Comparison of brush and biopsy sampling methods of the ileal pouch for assessment of mucosa-associated microbiota of human subjects*. Microbiome 2(1): 5. **3931571**.

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18. Huse SM, DB Mark Welch, A Voorhis, A Shipunova, **HG Morrison**, AM Eren and ML Sogin (2014b). *VAMPS: A website for visualization and analysis of microbial population structures*. BMC Bioinformatics 15: 41. **3922339**.
19. Maltz MA, L Bomar, P Lapiere, **HG Morrison**, EA McClure, ML Sogin and J Graf (2014). *Metagenomic analysis of the medicinal leech gut microbiota*. Front Microbiol 5: 151. **4029005**.
20. Nelson MC, **HG Morrison**, J Benjamino, SL Grim and J Graf (2014). *Analysis, optimization and verification of Illumina-generated 16s rRNA gene amplicon surveys*. PLoS ONE 9(4): e94249. 3983156.
21. Swan BK, MD Chaffin, M Martinez-Garcia, **HG Morrison**, EK Field, NJ Poulton, ED Masland, CC Harris, A Sczyrba, PS Chain, S Koren, T Woyke and R Stepanauskas (2014). *Genomic and metabolic diversity of marine group I Thaumarchaeota in the mesopelagic of two subtropical gyres*. PLoS ONE 9(4): e95380. **3990693**.
22. Willger SD, SL Grim, EL Dolben, A Shipunova, TH Hampton, **HG Morrison**, LM Filkins, GA O'Toole, LA Moulton, A Ashare, ML Sogin and DA Hogan (2014). *Characterization and quantification of the fungal microbiome in serial samples from individuals with cystic fibrosis*. Microbiome 2: 40. **4236224**.
23. Eren AM, L Maignien, WJ Sul, LG Murphy, SL Grim, **HG Morrison** and ML Sogin (2013a). *Oligotyping: Differentiating between closely related microbial taxa using 16s rRNA gene data*. Methods Ecol Evol 4(12). **3864673**.
24. Eren AM, JH Vineis, **HG Morrison** and ML Sogin (2013b). *A filtering method to generate high quality short reads using Illumina paired-end technology*. PLoS ONE 8(6): e66643. **3684618**.
25. Marteinson VT, A Runarsson, A Stefansson, T Thorsteinsson, T Johannesson, SH Magnusson, E Reynisson, B Einarsson, N Wade, **HG Morrison** and E Gaidos (2013). *Microbial communities in the subglacial waters of the Vatnajökull ice cap, Iceland*. ISME J 7(2): 427-437. **3554413**.
26. Newton RJ, SM Huse, **HG Morrison**, CS Peake, ML Sogin and SL McLellan (2013a). *Shifts in the microbial community composition of Gulf Coast beaches following beach oiling*. PLoS ONE 8(9): e74265. **3769389**.
27. Newton RJ, MJ Bootsma, **HG Morrison**, ML Sogin and SL McLellan (2013b). *A microbial signature approach to identify fecal pollution in the waters off an urbanized coast of Lake Michigan*. Microb Ecol 65(4): 1011-1023. **4084971**.
28. Price KE, TH Hampton, AH Gifford, EL Dolben, DA Hogan, **HG Morrison**, ML Sogin and GA O'Toole (2013). *Unique microbial communities persist in individual cystic fibrosis patients throughout a clinical exacerbation*. Microbiome 1(1): 27. **3971630**.
29. Vital M, CR Penton, Q Wang, VB Young, DA Antonopoulos, ML Sogin, **HG Morrison**, L Raffals, EB Chang, GB Huffnagle, TM Schmidt, JR Cole and JM Tiedje (2013). *A gene-targeted approach to investigate the intestinal butyrate-producing bacterial community*. Microbiome 1(1): 8. **4126176**.
30. Young VB, LH Raffals, SM Huse, M Vital, D Dai, PD Schloss, JM Brulc, DA Antonopoulos, RL Arrieta, JH Kwon, KG Reddy, NA Hubert, SL Grim, JH Vineis, S Dalal, **HG Morrison**, AM Eren, F Meyer, TM Schmidt, JM Tiedje, EB Chang and ML Sogin (2013). *Multiphasic analysis of the temporal development of the distal gut microbiota in patients following ileal pouch anal anastomosis*. Microbiome 1(1): 9. **3971607**.
31. Bowen JL, **HG Morrison**, JE Hobbie and ML Sogin (2012). *Salt marsh sediment diversity: A test of the variability of the rare biosphere among environmental replicates*. ISME J 6(11): 2014-2023. **3475368**.
32. Filkins LM, TH Hampton, AH Gifford, MJ Gross, DA Hogan, ML Sogin, **HG Morrison**, BJ Paster and GA O'Toole (2012). *Prevalence of streptococci and increased polymicrobial diversity associated with cystic fibrosis patient stability*. J Bacteriol 194(17): 4709-4717. **3415522**.
33. Madan JC, DC Koestler, BA Stanton, L Davidson, LA Moulton, ML Housman, JH Moore, MF Guill, **HG Morrison**, ML Sogin, TH Hampton, MR Karagas, PE Palumbo, JA Foster, PL Hibberd and GA O'Toole (2012). *Serial analysis of the gut and respiratory microbiome in cystic fibrosis in infancy: Interaction between intestinal and respiratory tracts and impact of nutritional exposures*. MBio 3(4). **3428694**.
34. Vandewalle JL, GW Goetz, SM Huse, **HG Morrison**, ML Sogin, RG Hoffmann, K Yan and SL McLellan (2012). *Acinetobacter, Aeromonas and Trichococcus populations dominate the microbial community within urban sewer infrastructure*. Environ Microbiol 14(9): 2538-2552. **3427404**.
35. Bowen JL, BB Ward, **HG Morrison**, JE Hobbie, I Valiela, LA Deegan and ML Sogin (2011). *Microbial community composition in sediments resists perturbation by nutrient enrichment*. ISME J 5(9): 1540-1548. 3160680.
36. Perry DA, **HG Morrison** and RD Adam (2011). *Optical map of the genotype A1 WBC6 Giardia lamblia genome isolate*. Mol Biochem Parasitol 180(2): 112-114. **5386616**.
37. Adam RD, A Nigam, V Seshadri, CA Martens, GA Farneth, **HG Morrison**, TE Nash, SF Porcella and R Patel (2010). *The Giardia lamblia vsp gene repertoire: Characteristics, genomic organization, and evolution*. BMC Genomics 11: 424. **2996952**.
38. Adey A, **HG Morrison**, Asan, X Xun, JO Kitzman, EH Turner, B Stackhouse, AP MacKenzie, NC Caruccio, X Zhang and J Shendure (2010). *Rapid, low-input, low-bias construction of shotgun fragment libraries by high-density in vitro transposition*. Genome Biol 11(12): R119. **3046479**.
39. Huse SM, DM Welch, **HG Morrison** and ML Sogin (2010). *Ironing out the wrinkles in the rare biosphere through improved OTU clustering*. Environ Microbiol 12(7): 1889-1898. **2909393**.
40. Keeling PJ, N Corradi, **HG Morrison**, KL Haag, D Ebert, LM Weiss, DE Akiyoshi and S Tzipori (2010). *The reduced genome of the parasitic microsporidian Enterocytozoon bienewsi lacks genes for core carbon metabolism*. Genome Biol Evol 2: 304-309. **2942035**.

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41. Morf L, C Spycher, H Rehrauer, CA Fournier, **HG Morrison** and AB Hehl (2010). *The transcriptional response to encystation stimuli in Giardia lamblia is restricted to a small set of genes*. Eukaryot Cell 9(10): 1566-1576. 2950437.
42. Parfrey LW, J Grant, YI Tekle, E Lasek-Nesselquist, **HG Morrison**, ML Sogin, DJ Patterson and LA Katz (2010). *Broadly sampled multigene analyses yield a well-resolved eukaryotic tree of life*. Syst Biol 59(5): 518-533.
43. Akiyoshi DE, **HG Morrison**, S Lei, X Feng, Q Zhang, N Corradi, H Mayanja, JK Tumwine, PJ Keeling, LM Weiss and S Tzipori (2009). *Genomic survey of the non-cultivable opportunistic human pathogen, Enterocytozoon bieneusi*. PLoS Pathog 5(1): e1000261.
44. Antonopoulos DA, SM Huse, **HG Morrison**, TM Schmidt, ML Sogin and VB Young (2009). *Reproducible community dynamics of the gastrointestinal microbiota following antibiotic perturbation*. Infect Immun.
45. Aurrecochea C, J Brestelli, BP Brunk, JM Carlton, J Dommer, S Fischer, B Gajria, X Gao, A Gingle, G Grant, OS Harb, M Heiges, F Innamorato, J Iodice, JC Kissinger, E Kraemer, W Li, JA Miller, **HG Morrison**, V Nayak, C Pennington, DF Pinney, DS Roos, C Ross, CJ Stoeckert, Jr., S Sullivan, C Treatman and H Wang (2009). *GiardiaDB and TrichDB: Integrated genomic resources for the eukaryotic protist pathogens Giardia lamblia and Trichomonas vaginalis*. Nucleic Acids Res 37(Database issue): D526-530.
46. Huber JA, **HG Morrison**, SM Huse, PR Neal, ML Sogin and DB Mark Welch (2009). *Effect of PCR amplicon size on assessments of clone library microbial diversity and community structure*. Environ Microbiol 11(5): 1292 - 1302.
47. Turanov AA, AV Lobanov, DE Fomenko, **HG Morrison**, ML Sogin, LA Klobutcher, DL Hatfield and VN Gladyshev (2009). *Genetic code supports targeted insertion of two amino acids by one codon*. Science 323(5911): 259-261.
48. Corradi N, DE Akiyoshi, **HG Morrison**, X Feng, LM Weiss, S Tzipori and PJ Keeling (2007). *Patterns of genome evolution among the microsporidian parasites Encephalitozoon cuniculi, Antonospora locustae and Enterocytozoon bieneusi*. PLoS ONE 2(12): e1277.
49. Huber JA, DB Mark Welch, **HG Morrison**, SM Huse, PR Neal, DA Butterfield and ML Sogin (2007). *Microbial population structures in the deep marine biosphere*. Science 318(5847): 97-100.
50. Huse SM, JA Huber, **HG Morrison**, ML Sogin and DM Welch (2007). *Accuracy and quality of massively parallel DNA pyrosequencing*. Genome Biol 8(7): R143.
51. **Morrison HG**, AG McArthur, FD Gillin, SB Aley, RD Adam, GJ Olsen, AA Best, WZ Cande, F Chen, MJ Cipriano, BJ Davids, SC Dawson, HG Elmendorf, AB Hehl, ME Holder, SM Huse, UU Kim, E Lasek-Nesselquist, G Manning, A Nigam, JE Nixon, D Palm, NE Passamaneck, A Prabhu, CI Reich, DS Reiner, J Samuelson, SG Svärd and ML Sogin (2007). *Genomic minimalism in the early diverging intestinal parasite Giardia lamblia*. Science 317(5846): 1921-1926.
52. Prabhu A, **HG Morrison**, CR Martinez, 3rd and RD Adam (2007). *Characterisation of the subtelomeric regions of Giardia lamblia genome isolate WBC6*. Int J Parasitol 37(5): 503-513.
53. Cantarel BL, **HG Morrison** and W Pearson (2006). *Exploring the relationship between sequence similarity and accurate phylogenetic trees*. Mol Biol Evol 23(11): 2090-2100.
54. Sogin ML, **HG Morrison**, JA Huber, D Mark Welch, SM Huse, PR Neal, JM Arrieta and GJ Herndl (2006). *Microbial diversity in the deep sea and the underexplored "rare biosphere"*. Proc Natl Acad Sci U S A 103(32): 12115-12120.
55. Gould RM, **HG Morrison**, E Gilland and RK Campbell (2005). *Myelin tetraspan family proteins but no non-tetraspan family proteins are present in the ascidian (Ciona intestinalis) genome*. Biol Bull 209(1): 49-66.
56. Weiland ME, AG McArthur, **HG Morrison**, ML Sogin and SG Svärd (2005). *Annexin-like alpha giardins: A new cytoskeletal gene family in Giardia lamblia*. Int J Parasitol 35(6): 617-626.
57. Best AA, **HG Morrison**, AG McArthur, ML Sogin and GJ Olsen (2004). *Evolution of eukaryotic transcription: Insights from the genome of Giardia lamblia*. Genome Res 14(8): 1537-1547.
58. Powell WH, **HG Morrison**, EJ Weil, SI Karchner, ML Sogin, JJ Stegeman and ME Hahn (2004). *Cloning and analysis of the CYP 1A promoter from the Atlantic killifish (Fundulus heteroclitus)*. Mar Environ Res 58(2-5): 119-124.
59. Reiner DS, ML Hetsko, JG Meszaros, CH Sun, **HG Morrison**, LL Brunton and FD Gillin (2003). *Calcium signaling in excystation of the early diverging eukaryote, Giardia lamblia*. J Biol Chem 278(4): 2533-2540.
60. **Morrison HG**, G Zamora, RK Campbell and ML Sogin (2002). *Inferring protein function from genomic sequence: Giardia lamblia expresses a phosphatidylinositol kinase-related kinase similar to yeast and mammalian TOR*. Comp Biochem Physiol B Biochem Mol Biol 133(4): 477-491.
61. Nixon JE, A Wang, **HG Morrison**, AG McArthur, ML Sogin, BJ Loftus and J Samuelson (2002a). *A spliceosomal intron in Giardia lamblia*. Proc Natl Acad Sci U S A 99(6): 3701-3705.
62. Nixon JE, A Wang, J Field, **HG Morrison**, AG McArthur, ML Sogin, BJ Loftus and J Samuelson (2002b). *Evidence for lateral transfer of genes encoding ferredoxins, nitroreductases, NADH oxidase, and alcohol dehydrogenase 3 from anaerobic prokaryotes to Giardia lamblia and Entamoeba histolytica*. Eukaryot Cell 1(2): 181-190.
63. Pahl N, S Homsy, **HG Morrison** and RM Gould (2002). *mRNAs located in Squalus acanthias (spiny dogfish) oligodendrocyte processes*. Biol Bull 203(2): 217-218.
64. Arkhipova IR and **HG Morrison** (2001). *Three retrotransposon families in the genome of Giardia lamblia: Two telomeric, one dead*. Proc Natl Acad Sci U S A 98(25): 14497-14502.
65. **Morrison HG**, AJ Roger, TG Nystul, FD Gillin and ML Sogin (2001). *Giardia lamblia expresses a proteobacterial-like DNAK homolog*. Mol Biol Evol 18(4): 530-541.

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66. Smith R, E Kavanagh, **HG Morrison** and RM Gould (2001). *Messenger RNAs located in spiny dogfish oligodendrocyte processes*. Biol Bull 201(2): 255-256.
67. Gould RM, CM Freund, J Engler and **HG Morrison** (2000). *Optimization of homogenization conditions used to isolate mRNAs in processes of myelinating oligodendrocytes*. Biol Bull 199(2): 215-217.
68. McArthur AG, **HG Morrison**, JE Nixon, NQ Passamanek, U Kim, G Hinkle, MK Crocker, ME Holder, R Farr, CI Reich, GE Olsen, SB Aley, RD Adam, FD Gillin and ML Sogin (2000). *The Giardia genome project database*. FEMS Microbiol Lett 189(2): 271-273.
69. Gould R, C Freund, F Palmer, PE Knapp, J Huang, H Morrison and DL Feinstein (1999). *Messenger RNAs for kinesins and dynein are located in neural processes*. Biol Bull 197(2): 259-260.
70. Jacob J, G Raab, VJ Soballa, A Luch, G Grimmer, H Greim, J Doehmer, **HG Morrison**, JJ Stegeman and A Seidel (1999). *Species-dependent metabolism of benzo[*c*]phenanthrene and dibenzo[*a,l*]pyrene by various CYP450 isoforms*. Polycyclic Aromatic Compounds 16(1-4): 191-203. Not in PubMed.
71. Roger AJ, **HG Morrison** and ML Sogin (1999). *Primary structure and phylogenetic relationships of a malate dehydrogenase gene from Giardia lamblia*. J Mol Evol 48(6): 750-755.
72. Sanchez LB, **HG Morrison**, ML Sogin and M Muller (1999). *Cloning and sequencing of an acetyl-CoA synthetase (ADP-forming) gene from the amitochondriate protist, Giardia lamblia*. Gene 233(1-2): 225-231.
73. Henze K, **HG Morrison**, ML Sogin and M Muller (1998). *Sequence and phylogenetic position of a class II aldolase gene in the amitochondriate protist, Giardia lamblia*. Gene 222(2): 163-168.
74. **Morrison HG**, EJ Weil, SI Karchner, ML Sogin and JJ Stegeman (1998). *Molecular cloning of CYP1A from the estuarine fish Fundulus heteroclitus and phylogenetic analysis of CYP1 genes: Update with new sequences*. Comp Biochem Physiol C Pharmacol Toxicol Endocrinol 121(1-3): 231-240.
75. Stegeman JJ, V Soballa, **HG Morrison**, J Jacob and J Doehmer (1998). *Catalytic properties of scup cytochrome P450 1A expressed in Chinese hamster V79 cells*. Marine Environmental Research 46(1): 395. Not in PubMed.
76. Hinkle G, **HG Morrison** and ML Sogin (1997). *Genes coding for reverse transcriptase, DNA-directed RNA polymerase, and chitin synthase from the microsporidian Spraguea lophii*. Biol Bull 193(2): 250-251.
77. Sogin ML, **HG Morrison**, G Hinkle and JD Silberman (1996). *Ancestral relationships of the major eukaryotic lineages*. Microbiologia 12(1): 17-28.
78. Gunderson J, G Hinkle, D Leipe, **HG Morrison**, SK Stickel, DA Odelson, JA Breznak, TA Nerad, M Muller and ML Sogin (1995). *Phylogeny of trichomonads inferred from small-subunit rRNA sequences*. J Eukaryot Microbiol 42(4): 411-415.
79. Kirchhoff F, **HG Morrison** and RC Desrosiers (1995). *Identification of v3 mutations that can compensate for inactivating mutations in c4 of simian immunodeficiency virus*. Virology 213(1): 179-189.
80. **Morrison HG**, MF Oleksiak, NW Cornell, ML Sogin and JJ Stegeman (1995a). *Identification of cytochrome P450 1A (CYP1A) genes from two teleost fish, toadfish (Opsanus tau) and scup (Stenotomus chrysops), and phylogenetic analysis of CYP1A genes*. Biochem J 308 ( Pt 1): 97-104.
81. **Morrison HG**, F Kirchhoff and RC Desrosiers (1995b). *Effects of mutations in constant regions 3 and 4 of envelope of simian immunodeficiency virus*. Virology 210(2): 448-455.
82. Kirchhoff F, **HG Morrison**, MG Murray, P Rennert and RC Desrosiers (1994). *SIVmac expressing hybrid envelope proteins containing HIV-1 v3 and/or c4 sequences is not competent for replication*. AIDS Res Hum Retroviruses 10(3): 309-313.
83. **Morrison HG**, F Kirchhoff and RC Desrosiers (1993a). *Evidence for the cooperation of gp120 amino acids 322 and 448 in SIVmac entry*. Virology 195(1): 167-174.
84. **Morrison HG** and RC Desrosiers (1993b). *A PCR-based strategy for extensive mutagenesis of a target DNA sequence*. Biotechniques 14(3): 454-457.
85. Brown SE, **HG Morrison**, N Karabatsos and DL Knudson (1991). *Genetic relatedness of two new Orbivirus serogroups: Orungo and Lebombo*. J Gen Virol 72 (Pt 5): 1065-1072.
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