

BIOGRAPHICAL SKETCH

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NAME: Baker, Henry V.

eRA COMMONS USER NAME (credential, e.g., agency login): hvbaker

POSITION TITLE: Hazel Kitzman Professor of Genetics and Chair Department of Molecular Genetics and Microbiology

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Maryland Baltimore County, Catonsville, MD	B.A.	05/1978	Biological Sciences and Psychology (double major)
University of Maryland Baltimore County, Catonsville, MD	Ph.D.	05/1984	Biological Sciences
Harvard Medical School, Boston, MA	Post Doc	08/1987	Microbiology and Molecular Genetics

A. Personal Statement

Dr. Baker is an expert in gene expression profiling studies and statistics. For the past fifteen years, he has collaborated and published extensively with others including the participating investigators on the Glue Grant (U54 GM-06211), and members of the Sepsis and Critical Illness Research Center at the University of Florida. His expertise is in the extraction of biological information from large datasets, especially genomics, and this will be his primary responsibility here.

B. Positions and Honors**Positions and Employment**

1987-1993 Assistant Professor of Immunology and Medical Microbiology; College of Medicine, UF
 1993-2001 Associate Professor of Molecular Genetics and Microbiology; College of Medicine, UF
 1995-2008 Program Director - IDP Advanced Genetics Concentration (Genetics Graduate Program)
 1995-1996 Associate Chair; Department of Molecular Genetics and Microbiology; College of Medicine, UF
 1996-1997 Acting Chair; Department of Molecular Genetics and Microbiology; College of Medicine, UF
 1997-2003 Associate Chair; Department of Molecular Genetics and Microbiology; College of Medicine, UF
 2000-present Associate Director; University of Florida Genetics Institute
 2003-2008 Interim Chair, Department of Molecular Genetics and Microbiology
 2009-2014 Co-director University of Florida Computational Biology Program
 2012-2-2013 Interim Director; University of Florida Genetics Institute
 1999-present Executive Board University of Florida Genetics Institute
 2001-present Professor of Molecular Genetics and Microbiology; College of Medicine, University of Florida
 2004-present Professor of Surgery; College of Medicine, University of Florida
 2008-present Chair, Department of Molecular Genetics and Microbiology
 2008-present Hazel Kitzman Professor of Genetics

Other Experience and Professional Memberships

- 2003-2012 Member – Steering Committee of the Large Scale Collaborative Research Program – Inflammation and the Host Response to Trauma U54 GN-62118
- 2005 Genome Canada Competition III– Genome External Reviewer of Large Scale Projects
- 2006 National Institutes of Health Special Emphasis Panel/Scientific Review Group ZCA1 SRRB-U: Cancer Genome Characterization Centers
- 2006 National Institutes of Health Special Emphasis Panel/Scientific Review Group ZCA1 SRRB-U (J1): Development of Advanced Genomic Characterization Technologies" (dAGCT) program
- 2007 National Science Foundation Eukaryotes Systems 1 Spring 2007 Panel
- 2007 National Institutes of Health Special Emphasis Panel/Scientific Review Group 2007/10 ZCA1 SRRB-3 (O1) R: Exfoliated Cells and Circulating DNA in Cancer Detection and Diagnosis
- 2007 National Institutes of Health Special Emphasis Panel/Scientific Review Group 2007/10 ZCA1 SRRB-3 (O2) S: Innovations in Cancer Sample Preparation
- 2007 German Federal Ministry of Education and Research (BMBF) "Integrated Networks for Disease-Oriented Genome Research (NGFNplus)" Panel
- 2010 National Science Foundation Molecular and Cellular Biosciences ad hoc reviewer
- 2012 Netherlands Organization for Scientific Research – reviewer
- 2014 - Member – Steering Committee PICS: A New Horizon for Surgical Critical Care P50 GM-111152

Honors

- 2016 Distinguished Alumni, College of Natural and Mathematical Sciences, University of Maryland Baltimore County

C Contribution to Science

1) Dr. Baker has a long standing interest in the regulation of gene expression. His initial contributions to science came during his dissertation research where his efforts focused on growth-rate-dependent gene expression of genes encoding enzymes of central intermediary metabolism in the bacterium *Escherichia coli*. For these studies Dr. Baker constructed a series of *gnd::LacZ* operon and gene fusions using bacterial phages to mediate the fusions. Dr. Baker was able to demonstrate that growth-rate-dependent regulation of 6-phosphogluconate dehydrogenase was carried out by a post-transcriptional mechanism mediated by an essential site within the structural gene.

- Farrish, E.E., H.V. Baker II, and R.E. Wolf, Jr. 1982. Different control circuits for growth rate-dependent regulation of 6-phosphogluconate dehydrogenase and protein components of the translational machinery in *Escherichia coli*. *J. Bacteriol.* 152:584-594.
- Baker, H.V., II, and R.E. Wolf, Jr. 1983. Growth rate-dependent regulation of 6-phosphogluconate dehydrogenase level in *Escherichia coli* K-12; β -galactosidase expression in *gnd-lac* operon fusion strains. *J. Bacteriol.* 153:771-781.
- Nasoff, M.S., H.V. Baker II, and R.E. Wolf, Jr. 1984. The DNA sequence of the *Escherichia coli* gene, *gnd*, for 6-phosphogluconate dehydrogenase. *Gene.* 27:253-264.
- Baker, H.V., II and R.E. Wolf, Jr. 1984. An essential site for growth rate-dependent regulation within a structural gene. *Proc. Natl. Acad. Sci. USA.* 81:7669-7673.

2) For his postdoctoral training and during the early part of his career as an independent investigator, Dr. Baker focused on the regulation and control of eukaryotic gene expression. His studies focused on the mechanisms responsible for high-level glycolytic enzyme gene expression in *Saccharomyces cerevisiae*. These studies were centered on the transcription factors (Gcr1p and Rap1p) responsible for high-level gene expression and on the promotor architecture of genes encoding glycolytic enzymes. Dr. Baker carried out the initial characterization of *GCR1*, sequenced it and showed that it encoded a DNA-binding protein that bound to CT-motifs in the promoter region of glycolytic enzyme genes. Dr. Baker's group showed repressor activator protein 1 (Rap1p) binding at an adjacent Rap1p-binding site was required for Gcr1p to bind at CT-motifs *in vivo*. Dr. Baker's work established the combinatorial interactions between Rap1p and Gcr1p and their roles in mediating high-level glycolytic enzyme gene expression in yeast.

- Baker, H.V. 1986. Glycolytic gene expression in *Saccharomyces cerevisiae*: the nucleotide sequence of *GCR1*, null mutants, and evidence for expression. *Mol. Cell. Biol.* 6:3774-3784.
- Baker, H.V. 1991. *GCR1* of *Saccharomyces cerevisiae* encodes a DNA binding protein whose binding is abolished by mutations in the CTTCC sequence motif. *Proc. Natl. Acad. Sci. USA.* 88:9443-9447.

- c. Drazinic, C.M., J.B. Smerage, M.C. López, and H.V. Baker. 1996. Activation mechanism of the multifunctional transcription factor repressor activator protein, Rap1p. *Mol. Cell. Biol.* 16: 3187-3196.
- d. López, M.C., Smerage, J.B., and H.V. Baker. 1998. Multiple domains of Rap1p contribute to facilitated binding of Gcr1p. *Proc. Nat'l Acad Sci. USA* (95):14112-14117.

3) With the advent of genomic approaches in the mid to late 1980's Dr. Baker became an early adaptor of DNA microarray technology initially in yeast and then begin to transition and morph from a purely basic researcher into a statistically oriented, highly collaborative, translational researcher focused on using genomic approaches for the study of gene expression and disease phenotype. Dr. Baker made use of gene expression profiling to investigate the global gene expression profiles in wild-type and *gcr1* mutant stains of yeast. These studies led to an understanding of the growth phenotypes associated with *gcr1* mutant strains. Once Dr. Baker established himself as an expert in the design and analysis of expression profiling studies he assisted a number of other investigators in apply these powerful approaches to clinically important problems.

- a. López, M.C., and H.V. Baker. 2000. Understanding the growth phenotype of the yeast *gcr1* mutant in terms of global genomic expression patterns. *J. Bacteriol.* 182:4970-4978.
 - b. Baker, H.V. 2003. Discussion of Sebastiani, P., E. Gussoni, I.S. Kohane, M.F. Ramoni. 2003. Statistical challenges in functional genomics. *Stat. Sci.* 18:33-70.
 - c. Feezor, R.J., H.V. Baker, W. Xiao, W.A. Lee, T.S. Huber, M. Mindrinos, R.A. Kim, L. Ruiz-Taylor, L.L. Moldawer, R.W. Davis, and J.M. Seeger. 2004. Genomic and proteomic determinants of outcome in patients undergoing thoracoabdominal aortic aneurysm repair. *J. Immunology.* 172:7103-7109.
 - d. Yachnis, A.T. and H. V. Baker. 2006. Applications of Gene Expression Profiling to the Study of Malignant Gliomas. In: Runge M, Patterson C, eds. *The Principles of Molecular Medicine, Second Edition.* Totowa, NJ, USA: Humana Press pp. 760-765.
- 4) Dr. Baker's current contribution to science is as a collaborator, consultant, and mentor to investigators and young clinical investigators. His primary interests and contributions continue to be in the area of using gene expression profiling as a research tool to understand disease mechanisms and to develop and validate gene expression classifiers that will ultimately be useful in the clinical setting.
- a. Cobb, J.P., M.N. Mindrinos, C. Miller-Graziano, S.C. Calvano, H.V. Baker, W. Xiao, K. Laundanski, B.H. Brownstein, C. Elson, D.L. Hayden, D. Herndon, S.F. Lowery, R.F. Maier, D. Schoenfeld, L.L. Moldawer, R. Davis, R.G. Thompkins and the Inflammation and Host Response to Injury Large Scale Collaborative Research Program. 2005. Applications of genome-wide expression analysis to human health and disease. *Proc.Natl. Acad.Sci. USA* 102:4801-4806.
 - b. Calvano, S.E., W. Xiao, D.R. Richards, R. M. Felciano, H.V. Baker, R.J. Cho, R.O. Chen, B.H. Brownstein, J.P. Cobb, S.K. Tschoeke, C. Miller-Graziano, L.L. Moldawer, M.N. Mindrinos, R.W. Davis, R.G. Tompkins, S.F. Lowry, and the Inflammation and Host Response to Injury Large Scale Collaborative Research Program. 2005. A network-based analysis of systemic inflammation in humans. *Nature* 437:1032-1037
 - c. Xiao, W., M. N. Mindrinos, J. Seok, J. Cuschieri, A. G. Cuenca, H. Gao, D. L. Hayden, L. Hennessy, E. E. Moore, J. P. Minei, P. E. Bankey, J. L. Johnson, J. Sperry, A. B. Nathens, T. R. Billiar, M. A. West, B. H. Brownstein, P. H. Mason, H. V. Baker, C. C. Finnerty, M. G. Jeschke, M. C. Lopez, M. B. Klein, R. L. Gamelli, N. S. Gibran, B. Arnoldo, W. Xu, Y. Zhang, S. E. Calvano, G. P. McDonald-Smith, D. A. Schoenfeld, J. D. Storey, J. P. Cobb, H. S. Warren, L. L. Moldawer, D. N. Herndon, S. F. Lowry, R. V. Maier, R. W. Davis, and R. G. Tompkins. 2011. A genomic storm in critically injured humans. *J.Exp.Med.* 208:2581-2590. doi:jem.20111354 [pii];10.1084/jem.20111354 [doi].
 - d. Seok J, Warren HS, Cuenca AG, Mindrinos MN, Baker HV, Xu W, Richards DR, McDonald-Smith GP, Gao H, Hennessy L, Finnerty CC, López CM, Honari S, Moore EE, Minei JP, Cuschieri J, Bankey PE, Johnson JL, Sperry J, Nathens AB, Billiar TR, West MA, Jeschke MG, Klein MB, Gamelli RL, Gibran NS, Brownstein BH, Miller-Graziano C, Calvano SE, Mason PH, Cobb JP, Rahme LG, Lowry SF, Maier RV, Moldawer LL, Herndon DN, Davis RW, Xiao W, Tompkins RG; Inflammation and Host Response to Injury, Large Scale Collaborative Research Program. 2013. Genomic responses in mouse models poorly mimic human inflammatory diseases. *Proc Natl Acad Sci U S A.* 2013 Feb 26;110(9):3507-12. doi: 10.1073/pnas.1222878110. Epub 2013 Feb 11. PubMed PMID: 23401516; PubMed Central PMCID: PMC3587220.

Complete List of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/sites/myncbi/henry.baker.1/bibliography/45631087/public/?sort=date&direction=ascending>

D. Research Support

Ongoing Research Support

Hazel Kitzman Professor of Genetics Endowment (H.V. Baker) 2008 –
To support the chair of the department of molecular genetics and microbiology at the University of Florida
College of Medicine

P50GM111152-02 (F.A. Moore) 07/01/14 – 06/30/19
NIH/NIGMS

PICS: A New Horizon for Surgical Critical Care

Mortality from sepsis has been declining due in part to early detection and improved, evidence-based guidelines for its treatment. However, with improved in-hospital survival, we are seeing an increasing number of sepsis patients who are becoming chronic critically ill (CCI) and expressing a persistent, inflammation, immunosuppression and catabolism syndrome (PICS) associated with morbid long-term outcomes. This Program proposes to investigate and describe the epidemiology of CCI and PICS in sepsis patients, identify early biomarkers that can predict its incidence and outcome, explore mechanisms that drive this process, and examine potential interventions to prevent the development of PICS in septic CCI patients.

Role: Co-Investigator/Core 002, Co-Investigator/Core 003, Member of the Steering Committee

RO1 GM104481 L.L. Moldawer (PI) 06/01/13-04/30/17

Validation of a Genomic Based Prognostic in Severe Trauma

The goal of this project is to validate a gene expression classifier that predicts adverse outcomes of severely injured individuals

Role: Co-Investigator

Completed Research Support

RO1 DK091443 L.L. Moldawer (PI) 04/01/11- 03/31/15

Inflammation and repair as determinants of hemodialysis of fistula maturation

The goal of this proposal is to identify factors involved with fistula maturation.

Role: Co-Investigator.

R01 ES017099 M.J. Cohn (PI) 01/01/10 – 12/31/14

Targets of endocrine disruptors in external genitalia

The goal of this proposal is to identify the roll of endocrine disruptors in the development of external genitalia.

Role: Co-Investigator

U01 DE019765 (Adel K. El-Naggar) 9/20/09-05/31/14

Molecular and Epidemiologic Characterization of Salivary Gland Carcinomas

The goal of this work is elucidate gene expression profiles in salivary gland carcinomas.

Role: Co-Investigator