BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Mariano A. Garcia-Blanco	Professor, Dept. Molecular Genetics and Microbiology
eRA COMMONS USER NAME (credential, e.g., agency login)	

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Harvard College, Cambridge, MA	A.B.	1977	Biochemistry
Yale University, New Haven, CT	M.D.	1984	Medicine
Yale University, New Haven, CT	Ph.D.	1988	Biochemistry
MIT, Cambridge, MA (Sponsor: Phillip A. Sharp)	PostDoc	1987-90	Molecular Biology

A. Personal Statement

I can contribute generally to the proposed COBRE center and in particular to projects that focus on the study of dengue host-virus interactions. My laboratory performed the first genome scale screen for dengue virus host factors (see Sessions et al., 2009 **Nature**), and we have used of SILAC/mass spectrometry and RNA interference to discover and characterize human host RNA binding proteins that interact with dengue virus RNAs (Anwar et al., 2009 **J Biol Chem**; Ward et al., manuscript submitted).

B. Positions and Honors

1990 Assistant Professor of Molecular Cancer Biology, Assistant Professor of Microbiology, and Research Assistant Professor of Medicine, Duke University Medical Center
1996 Associate Professor of Molecular Cancer Biology (with tenure), Duke University Medical Center
1999 Associate Professor of Genetics, Microbiology and Medicine, Duke University Medical Center
2002 Professor of Molecular Genetics and Microbiology, and Medicine, Duke University Medical Center
2005 Adjunct Professor of Microbiology, University of Puerto Rico
2006 Professor of Emerging Infectious Diseases, Duke-NUS Graduate Medical School, Singapore
1997-02 Raymond and Beverly Sackler Foundation Scholar
1999-08 Member, Editorial board, **Molecular and Cellular Biology** (ASM)
2003-06 Co-Director, Duke Center for RNA Biology
2004-05 Editor, **Methods**, Volume 102
2004 Chair, Gordon Research Conference on the Biology of Post-transcriptional Gene Regulation
2005 Member, Editorial Board, **RNA**
2005-09 Chair, Scientific Advisory Board, Genome Quebec (Canada)
2005 Scientific Advisory Board, EURASNET Consortium (European Union)
2005-12 Trustee, Puerto Rico Trust for Science, Research and Technology
2006-08 Member, Board of Directors, The RNA Society
2006 Director, Duke Center for RNA Biology
2008-11 Member, National Advisory General Medical Sciences Council (NIGMS)
2011-13 Member, Council of Scientific Advisers, Intl. Centre Genetic Engineering and Biotechnology (UN)

C. Publications (selected from ~120):

Arroyo, J.I., Apperson, S.A., Cropp, C.B., Marafino, B.J. Jr., Monath, T.P., Tesh, R.B., Shope, R.E. and Garcia-Blanco, M.A. (1988). Effect of human gamma interferon on yellow fever virus infection. **Am. J. Trop. Med. Hyg.** 38: 647-650.

Garcia-Blanco, M.A. and Cullen B.R. (1991). Molecular basis of latency in pathogenic human viruses. **Science** 254: 815-820.

Colvin, R.A. and Garcia-Blanco, M.A. (1992). Unusual structure of the human immunodeficiency virus type 1 trans-activation response element. **J. Virol.** 66: 930-935.

Suñe, C., Hayashi, T., Liu, Y., Lane, W.S., Young, R.A. and Garcia-Blanco, M.A. (1997). CA150, a nuclear protein associated with the RNA polymerase II holoenzyme, is involved in Tat-activated Human Immunodeficiency Virus Type 1 transcription. **Mol. Cell. Biol.** 17: 6029-6039.

Florez, P., Sessions, O., Wagner, E., Gromeier, M., and Garcia-Blanco, M.A. (2005) The Polypyrimidine tract binding protein is required for efficient picornavirus gene expression and propagation. **J. Virol**. 79: 6172-6179.

Wagner, E.J. and Garcia-Blanco, M. A. (2002) RNAi-mediated PTB depletion leads to enhanced exon definition. **Mol. Cell** 10: 943-949. (PMID: 12419237)

Anwar A., Leong K.M., Ng M.L., Chu J.H., and Garcia-Blanco M.A. (2009) The polypyrimidine tract binding protein is required for efficient dengue virus propagation and associates with the viral replication machinery. **J. Biol. Chem.** 284: 17021-17029.

Miller, H.B., Saunders, K.O., Tomaras, G.D., and Garcia-Blanco, M.A. (2009) Tat-SF1 is not required for Tat transactivation but does regulate the relative levels of unspliced and spliced HIV-1 RNAs. **PLoS ONE**, 4(5): e5710.

Sessions O.M., Barrows N.J., Souza-Neto J.A., Robinson T.J., Hershey C.L., Rodgers M.A., Ramirez J.L., Dimopoulos G., Yang P.L., Pearson J.L., and Garcia-Blanco M.A**.** (2009) Discovery of insect and human dengue virus host factors. **Nature** 458: 1047-1050. PMC in Process

D. Research Support

• Alternative splicing and epithelial-mesenchymal plasticity in prostate tumors
Principal Investigator: Mariano A. Garcia-Blanco
Agency: NIH/NCI Type: R01CA127727 12/1/2008-11/30/2013
The overarching goals of this application are to understand this epithelial plasticity in prostate tumors and its importance in human prostate cancer. As PI Dr. Garcia-Blanco directs all of the research.

• Defining the Functional Role of a Novel MS Susceptibility Gene, IL7R alpha chain
Principal Investigator: Simon Gregory
Agency: NIH/NINDS Type: R01NS060925 9/1/2009-6/30/2014
The major goals of this project are to (1) identify the factors that mediate the silencing of IL7Rα exon 6, (2) evaluate the functional consequences of exon 6 alternative splicing and (3) analyze the genes that encode them within an MS case/control population. Role: Co Investigator. Dr. Garcia-Blanco directs the research described in aim one and co-directs the research described in aim two.

• Duke Comprehensive Cancer Center Core Support Grant
Principal Investigator: Kim Lyerly
Agency: NIH/NCI Type: P30CA014236 1/1/2010-12/31/2014
The mission of the Duke Comprehensive Cancer Center (DCCC) is to make preeminent contributions to understanding, preventing, detecting, diagnosing and treating cancer through laboratory investigation, clinical research, cancer prevention and control, research, patient care, education and interaction with individuals and organizations outside the University. Role: Co Program Leader. Dr. Garcia-Blanco co-leads the program in nucleic acid biology the other co-leader is Dr. Bruce Sullenger.

• Regulation of the alternative splicing of FGF-R2 pre-mRNA
Principal Investigator: Mariano A. Garcia-Blanco
Agency: NIH/NIGMS Type: R01GM063090 Years 5-8 5/1/2001-4/30/2009
The major goals of this project are: (1) characterization of cis-acting elements required for silencing of FGF-R2 exon IIIb; (2) identification and characterization of trans-acting factors that mediate FGF-R2 exon IIIb silencing; (3) characterization of the cis-elements required for cell-type specific FGF-R2 exon choice; (4) identification of trans-acting factors that mediate cell-type specific FGF-R2 exon choice. As PI Dr. Garcia-Blanco directed all of the research.

• Identification of Environmental Agents Altering Prostate Cancer Behavior
Principal Investigator: Phillip Febbo
Agency: DOD Type: Idea Development Award 12/1/2006-11/30/2009
The major goals of this project are: 1) To develop a high-through put (HTP) assay for FGFR2 splice variant expression in genetically engineered prostate epithelial cells; 2) To determine if environmental agents can alter FGFR2 splice variant choice in genetically engineered prostate epithelial cells; 3) To determine if environmental agents altering FGFR2 splice variant choice affect in vitro or in vivo prostate epithelial cell behavior. Role: Co Investigator – Dr. Garcia-Blanco co-directed all of the studies carried out in this proposal and specifically brought the expertise in RNA biology and reporters of phenotypic plasticity.

• Discovery and development of broad-spectrum anti-flaviviral drugs
Principal Investigator: Mariano A Garcia-Blanco, Tim Haystead and Daniel Engel (MPI)
Agency: NIH/NIAID Type: R01AI089526 (Partnership) 6/1/2010-5/31/2015
The major goal is to discover and develop new drugs capable of combating most, if not all, flaviviral pathogens. Dr. Garcia-Blanco (contact PI) directs the work aimed at identifying host factors for flaviviruses and at testing compounds for flaviviral infection in cell culture and animal models.

• Identification and characterization of dengue virus receptors
Principal investigator: Sheemei Lok
Agency: NMRC (Singapore) Type: IRG 1/1/11-12/31/13
The major goal is the identification of receptors for dengue virus in human cells.
Role: Co-PI. Dr. Garcia-Blanco directs the evaluation of host factors identified in genome scale RNAi screens for their potential as receptors.

• Role of stress granule components in dengue virus propagation
Principal investigator: Mariano A. Garcia-Blanco
Agency: NMRC (Singapore) Type: IRG 1/1/11-12/31/13
The major goals are 1) to determine the role of stress granules and stress granule associated RNA binding protein on dengue virus infection and 2) the effect of viral infection on stress granules. Dr. Garcia-Blanco directs all of the research.

• Function of nucleic acid binding DENV host factors
Principal Investigator: Mariano A. Garcia-Blanco
Agency: NIH/NIAID Type: U54AI057157 (Dev Proj) 3/15/2009-2/28/2011
The major goal is to unravel the function of nucleic acid binding DVHFs. Dr. Garcia-Blanco directs all of the research.

•HIV-1 Gene Suppression by CD8+ T cells
Principal Investigator: Georgia D. Tomaras
Agency: NIH/NIAID Type: R01AI052779 Years 4-6 4/1/2008-3/31/2011
The major goal of this project is to understand the mechanism of transcriptional suppression mediated by CD8+ T cells on HIV-1 gene expression. Role: Co Investigator. Dr. Garcia-Blanco assisted Dr. Tomaras in

•RNA-Protein Interactions in Flavivirus Infection
Principal Investigator: Mariano A. Garcia-Blanco
Agency: NIH/NIAID Type: R21AI064925 9/30/2007-8/31/2009
The major goals of this project are: 1) To use RNA affinity chromatography and proteomic analysis to identify host proteins that specifically interact with important viral RNA elements, 2) To validate the functional importance of the identified RNA binding proteins. Dr. Garcia-Blanco directs all of the research.

•Developments of reagents for a genomewide screen for Dengue host factors
Principal Investigator: Mariano A. Garcia-Blanco
Agency: NIH/NIAID Type: U54AI057157 3/1/2008-2/28/2009
The major goal of this project is to characterize the *D. melanogaster* S2 cell adapted DEN2-S2 strain. Dr. Garcia-Blanco directs all of the research.

•Structural, Biochemical and Functional Studies of RNAPII CTD Interacting Proteins
Principal Investigator: Pei Zhou
Agency: NIH/NIGMS Type: R01GM079376 9/1/2008-7/31/2012
The major goals of the Garcia-Blanco collaboration are: Interactions between tandem FF domains of CA150 and the PCTD. Role: Co Investigator. Dr. Garcia-Blanco assists Dr. Zhou in the studies related to the human protein TCERG1 (CA150).