BIOGRAPHICAL SKETCH
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NAME: Primerano, Donald Anthony

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

POSITION TITLE: Professor and Vice Chair, Dept. of Biomedical Sciences, Marshall University

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
St. Vincent College, Latrobe PA	B.S.	05/1976	Biology
Duke University, Durham NC	Ph.D.	10/1982	Microbiology
Michigan State University	Postdoc	11/1988	Yeast gene regulation

A. Personal Statement

In the Appalachian Center for Cellular transport in Obesity Related Disorders (ACCORD) COBRE application, focused on cellular transport of obesity related disorders, the primary goal of the GABC will be to support the genomic research goals of the ACCORD project investigators. The GABC provides the following services: (1) high throughput next generation sequencing (NGS) to support RNA-Seq, whole exome, whole genome, microbiome and methylation studies, (2) bioinformatic and experimental design support for NGS projects, (3) automated Sanger DNA sequencing and RNA/DNA quality assessment, (4) access to critical shared instruments including real-time thermal cyclers, a Luminex 200 system, a Protein Simple Fluorimeter and a Spectramax plate reader and (5) workshops on next generation sequencing methods and bioinformatics methods central to COBRE research projects. COBRE projects will be given priority status to ensure timely completion.

My primary research interests are in the discovery of disease susceptibility genes/profiles using next generation sequencing, expression profiling and bioinformatic approaches. I also currently serve as the Co-Director of the Genomics and Bioinformatics Core Facility (GABC) and as a member of the WV-IDeA Network of Biomedical Research Excellence (WV-INBRE) Administrative Core and WV Cancer Genomics Steering Committee. I served as the Genomics Core Director from 1999-2011 and Co-Director of the GABC from 2011 to the present. As GABC Co-Director, I have experience in (1) developing sequencing strategies and service relationships between the GABC and research networks needing genomic analyses, (2) providing overall direction to a core with evolving technologies and institutional responsibilities, (3) assisting individual investigators in designing genomic experiments and (4) providing training in genomic technologies.

During the period from 1999 to the present, the GABC has successfully supported the goals of the several funded programs: WV-BRIN, WV-INBRE Phase I, WV-INBRE phase II, COBRE Transcription Factors and Cancer, and the WV Cancer Genomics Network. Under my direction, the GABC has launched next generation sequencing as a state-wide service and completed several NGS projects including microbiome, RNA-Seq, whole exome sequencing and whole genome sequencing. These experiences and accomplishments will enable GABC staff to design RNA-Seq and other genomic studies to support the research objectives of projects within this COBRE application. The following publications illustrate the roles of the GABC in genomic analyses.

1. TB Salisbury, JK Tomblin, DA Primerano, G Boskovic, J Fan, J Fletcher, N Santanam, E Hurn, GZ Morris, and J Denvir. (2014) Endogenous aryl hydrocarbon receptor promotes basal and inducible expression of tumor

necrosis factor target genes in MCF-7 cancer cells. Biochem Pharmacol 91:390-9 (2014) doi: 10.1016/j.bcp.2014.06.015. PMID: 24971714 PMCID: PMC4157967.
2. Denvir J, Neitch S, Fan J, Niles RM, Boskovic G, Schreurs BG, Primerano DA, and Alkon DL. Identification of the PS1 Thr147Ile Variant in a Family with Very Early Onset Dementia and Expressive Aphasia. J Alzheimer's Dis. 46(2):483-90 (2015) PMID: 25812849 [Epub ahead of print, in press]
3. Tomblin JK, Arthur S, Primerano DA, Chaudhry AR, Fan J, Denvir J, Salisbury TB. Aryl hydrocarbon receptor (AHR) regulation of L-Type Amino Acid Transporter 1 (LAT-1) expression in MCF-7 and MDA-MB-231 breast cancer cells. Biochem. Pharmacol. 106:94-103 (2016) PMID: 26944194
4. Denvir J, Boskovic B, Fan J, Primerano DA, Parkman JK, Kim, JH. Whole genome sequencing of the TALLYHO/Jng mouse and evaluation of obesity susceptibility candidate genes. BMC Genomics 17:907 (2016) PMID: 27835940

B. Positions and Honors

Positions and Employment

1975	Laboratory assistant in Microbiology at the Pittsburgh Public Health Labs
1975 - 1976	Teaching assistant in Microbiology at St. Vincent College.
1976 - 1982	Predoctoral fellow in Microbiology and Immunology (mentor, Dr. R. O. Burns) and member of the University Program in Genetics, Duke University
1982 - 1988	Research Associate, Department of Microbiology and Public Health (mentor, P.T. Magee) Michigan State University
1988 - 1994	Assistant Professor, Marshall University School of Medicine
1994 - 1998	Associate Professor, Marshall University School of Medicine
1998 - pres.	Professor, Joan C. Edwards School of Medicine at Marshall University Director of Marshall University Genomics Core Facility (1991- present) Director of Appalachian Cardiovascular Research Network (2000 – present)
2005 - pres.	Section Head, Division of Microbiology, Joan C. Edwards School of Medicine (JCESOM)
2014 - 2016	Interim Chair, Department of Biochemistry and Microbiology, JCESOM
2016- present	Professor and Vice Chair, Department of Biomedical Sciences, JCESOM

Other Experience and Professional Memberships

1990-1999	Director of MU DNA Core Facility
1999-2011	Director of MU Genomics Core Facility
1999-	Member, WV-INBRE Steering Committee
2000-	Member, American Society of Human Genetics
2003 -2014	Director of the Appalachian Cardiovascular Research Network
2008-	Member, Association of Biomolecular Resource Facilities
2011-	Co-Director, Genomics and Bioinformatics Core Facility

Honors:

1999	Professor of the Year given by the Medical School Class of 2001
2004	Graduate Faculty Achievement Award given by the MU Graduate Student Organization
2009	Certificate of Teaching Excellence awarded by the MU Joan C. Edwards School of Medicine
2014	Marshall University Academic Citizenship Excellence 2013-14 award (bronze level)

C. Contribution to Science

Over the past five years in my capacity as co-director of the Genomics and Bioinformatics Core Facility, I have collaborated with biomedical investigators to identify and characterize global molecular and cellular responses as well as changes in microbial communities. These collaborations have involved the use of Next Generation Sequencing (such as whole genome, RNA-Seq expression profiling, and microbiome analysis), microarray methods and variant genotyping.

1. In collaborative effort, JH Kim, J. Denvir, J. Parkman, J. Fan and I completed sequencing of the whole genome of the Tallyho (TH) mouse. We generated a complete catalog of TH SNP and indel variants which will facilitate the identification of causal variants that underlie metabolic diseases in TH mice and enable

identification of candidate susceptibility genes for complex human diseases like obesity and type 2 diabetes. As a test of our variant catalog, we filtered our list of variants to those occurring in an obesity quantitative trait locus, tabw2, identified in TH mice. We found a pathogenic missense polymorphism in the Cidec gene and characterized the variant's effect on Cidec protein function.

a. Denvir J, Boskovic B, Fan J, Primerano DA, Parkman JK, Kim, JH. Whole genome sequencing of the TALLYHO/Jng mouse and evaluation of obesity susceptibility candidate genes. BMC Genomics 17:907 (2016) PMID: 27835940

2. In collaboration with Travis Salisbury PhD, a set of 600 AHR-dependent genes (ADGs) whose expression is regulated by unliganded AHR were identified by RNA-Seq differential expression profiling (Salisbury et al 2014). Ingenuity Pathway Analysis revealed that the ADGs were significantly enriched in known dioxin and tumor necrosis factor (TNF) pathways. AHR was shown to be required for TNF induction of MNSOD and the cellular response to cytotoxicity in MCF-7 breast cancer cells. This latter result suggests a novel role for AHR in cancer progression as a mediator of TNF and antioxidant responses. In a related study (Tomblin et al 2016), LAT1 (a leucine transporter protein) was shown to be directly regulated by AHR and dioxin (given the presence of functional AHR binding site upstream of LAT1). Tomblin et al also showed the proliferation of MCF-7 and MDA-MB-231 cells was dependent on both LAT1 and AHR and concluded that these cancer cell lines were dependent on leucine uptake.

   a. TB Salisbury, JK Tomblin, DA Primerano, G Boskovic, J Fan, J Fletcher, N Santanam, E Hurn, GZ Morris, and J Denvir. Endogenous aryl hydrocarbon receptor promotes basal and inducible expression of tumor necrosis factor target genes in MCF-7 cancer cells. Biochem Pharmacol 91:390-9 (2014). doi: 10.1016/j.bcp.2014.06.015. Epub 2014 Jun 24. PMID: 24971714 PMCID: PMC4157967.

   b. Tomblin JK, Arthur S, Primerano DA, Chaudhry AR, Fan J, Denvir J, Salisbury TB. Aryl hydrocarbon receptor (AHR) regulation of L-Type Amino Acid Transporter 1 (LAT-1) expression in MCF-7 and MDA-MB-231 breast cancer cells. Biochem. Pharmacol. 106:94-103 (2016) PMID: 26944194

3. In collaboration with Christopher Cuff PhD, an association between oral microbiome and cognitive function was investigated by determining the relative abundance of bacterial species present in subgingival plaque from older adults with or without dementia (Cockburn et al 2012). The V3 variable region of the microbial 16S bacterial ribosomal RNA gene was amplified from the genomic DNA of subgingival microbes and sequenced on an Illumina HiSeq1000 System. Quantitative Insights Into Microbial Ecology (QIIME) software was used to make taxonomic assignments and measurements of microbial diversity. Although taxa differences did not reach statistical significance, a consistently higher level of Fusobacteriaceae and a generally lower level of Prevotellaceae was seen in subjects without dementia,

   a. Cockburn AF, Dehlin JM, Ngan T, Crout R, Boskovic G, Denvir J, Primerano D, Plassman BL, Wu B, Cuff CF. (2012) High throughput DNA sequencing to detect differences in the subgingival plaque microbiome in elderly subjects with and without dementia. Investigative Genetics 3:19. PMCID: PMC3488532, PMID: 22998923.

Complete List of Published Work in MyBibliography:
http://www.ncbi.nlm.nih.gov/sites/myncbi/donald.primerano.1/bibliography/47150066/public/?sort=date&direction=ascending

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

WV Cancer Genomics Network Primerano (Co-PI), Hardman (Co-PI) 07/01/2012- 06/30/2017
WV Higher Education Policy Commission Research Challenge Grant
The goal of the network is to develop a repository of cancer tissues and study the genomic and epigenomic events that cause cancers prevalent in West Virginia
Role: Co-PI

2P20GM103434-14 NIH/NIGMS Rankin (PI) 09/19/2014 - 07/31/2019
West Virginia IDeA Networks of Biomedical Research Excellence Phase III, Subproject Genomics and Bioinformatics Core (GABC)
The primary goal of the GABC is to enable the genomic research goals of individual and program project research grants.
Role: Co-PI

IDeA Core Optimization COBRE Administrative Supplement (CORES Implementation)
NIH National Institute of General Medical Science (NIGMS) Primerano (PI), Gibson (WVU PI)
01/2016-08/2017
Acquisition and deployment of iLab Solutions Core Management Software
Role: Co-PI

Genetic Basis of Pseudoacromegaly Primerano (Co-PI), Cahill (Co-PI) 02-23-2015
Joan C. Edwards School of Medicine Rezulin Oversight Committee
Identify genetic variants confer susceptibility to pseudoacromegaly
Role: Co:PI

Effects of Two Simple 12-week Mind-body Programs on Indices of Inflammation, Cellular Aging, and Genomic Profiles in Older Adults with Early Memory Loss MU-WVU Partnership Awards Program
Primerano (Co-PI), Innes (WVU Co-PI) 01/01/2016 – 12/31/2016
Identify Blood Biomarkers that characterize the effects of meditation
Role: Co-PI

Completed Research Support
2P20GM103434 NIH/NIGMS West Virginia IDeA Networks of Biomedical Research Excellence Phase II
Appalachian Cardiovascular Research Network Primerano (Co-PI) Rankin (Co-PI) 05/1/2009 - 07/30/2014
The goal was to develop research projects which characterized the genetic and environmental bases of vascular disease
Role: Co-PI