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Research interests:

Caloric restriction (CR) is the only intervention known to retard aging and postpone age-related diseases. There is a distinct possibility that common diseases and aging have an epigenetic component, and that the beneficial effects associated with CR are mediated by epigenetic processes. Epigenetics is the study of stable changes in gene function that are not caused by changes in DNA sequence. Epigenetic mechanisms are an interface between the environment and the genome, and control the expression of the information encoded by the genome. They may be viewed as a means for the environment to impose stable changes on gene expression: there is a significant body of evidence that nutritional factors can alter epigenetic mechanisms.

The focus of my research is to characterize, on a genome scale, how CR interferes with the age-associated epigenetic alterations. We are using next generation sequencing methods to carry out whole-genome assessment of the methylomes, transcriptomes, and miRNomes of circulating leukocytes purified from CR-practicing individuals and non-CR age-matched controls. We will correlate potential CR-related changes in the methylome with changes in RNA populations. Integration of the different data sets and analysis of their interactions will identify potential epigenetic mechanisms of CR.

Education:

Loma Linda University, Loma Linda, California	B.S.	1991	Biology
University of California Riverside, Riverside, California	Ph.D.	1998	Molecular Genetics
University of Tunis, School of Medicine, Tunis, Tunisia	M.D.	1983	Medicine

Positions and Employment

2009-Present: Assistant Staff Scientist at Childrens Hospital Oakland Research Institute, Oakland, CA, and Assistant Research Biochemist at the University of California Riverside, Riverside, CA

2006-2009: CIRM Clinical Fellow, Childrens Hospital Oakland Research Institute, Oakland, CA

2002-2006: Senior Scientist/Project Director, BioMarker Pharmaceuticals, Inc., Campbell, CA

2000-2002: Senior Research Scientist, Lifespan Genetics Research, Riverside, CA

1998-2000: Postdoctoral Fellow, Jerry L. Pettis Memorial Veterans Hospital, Loma Linda, CA

1994-1998: Graduate Student, University of California Riverside, Riverside, CA

1986-1994: Owner-Manager of a Residential Care Facility for Alzheimer's Patients, Riverside, CA

1983-1986: Public Health Physician, Ministry of Health, Tunisia

Patents:

Interventions to mimic the effects of calorie restriction. Granted on June 18, 2002.

Publications:

1. mRNA-Seq reveals complex patterns of gene regulation and expression in the mouse skeletal muscle transcriptome associated with calorie restriction.

Joseph M Dhahbi, Hani Atamna, Dario Boffelli, David IK Martin, Stephen R Spindler. *Physiological Genomics*. 2012 *in press*.

2. Simvastatin increases lifespan and improves cardiac function and stress resistance.

Stephen R. Spindler, Rui Li, **Joseph M. Dhahbi**, Patricia L. Mote, Rolf Bodmer, Karen Ocorr, and Frank Sauer.

2012; *submitted*.

3. Novel protein kinase signaling systems regulating lifespan identified by small molecule library screening using *Drosophila*.

Stephen R. Spindler, Rui Li, **Joseph M. Dhahbi**, Amy Yamakawa, and Frank Sauer. *PLoS One*. 2012; *in press*.

4. Identification and correction of systematic error in high-throughput sequence data.

Meacham F, Boffelli D, **Dhahbi J**, Martin DI, Singer M, Pachter L.

BMC Bioinformatics. 2011 Nov 21;12(1):451. [Epub ahead of print]

PMID: 22099972

5. Phyloepigenomic comparison of great apes reveals a correlation between somatic and germline methylation states.

Martin DI, Singer M, **Dhahbi J**, Mao G, Zhang L, Schroth GP, Pachter L, Boffelli D.

Genome Res. 2011 Dec;21(12):2049-57. Epub 2011 Sep 9.

PMID: 21908772

6. Deep sequencing reveals novel microRNAs and regulation of microRNA expression during cell senescence.

Dhahbi JM, Atamna H, Boffelli D, Magis W, Spindler SR, Martin DI.

PLoS One. 2011;6(5):e20509. Epub 2011 May 26.

PMID: 21637828

7. MetMap enables genome-scale Methylation for determining methylation states in populations.

Singer M, Boffelli D, **Dhahbi J**, Schönhuth A, Schroth GP, Martin DI, Pachter L.

PLoS Comput Biol. 2010 Aug 19;6(8):e1000888.

PMID: 20856582

8. Circulating blood leukocyte gene expression profiles: effects of the Ames dwarf mutation on pathways related to immunity and inflammation.

Dhahbi J, Li X, Tran T, Masternak MM, Bartke A.

Exp Gerontol. 2007 Aug;42(8):772-88. Epub 2007 Apr 24.

PMID: 17611063

9. Conserved and tissue-specific genic and physiologic responses to caloric restriction and altered IGFI signaling in mitotic and postmitotic tissues.

Spindler SR, **Dhahbi JM**.

Annu Rev Nutr. 2007;27:193-217. Review.

PMID: 17428180

10. Gene expression and physiologic responses of the heart to the initiation and withdrawal of caloric restriction.

Dhahbi JM, Tsuchiya T, Kim HJ, Mote PL, Spindler SR.

J Gerontol A Biol Sci Med Sci. 2006 Mar;61(3):218-31.

PMID: 16567370

11. Identification of potential caloric restriction mimetics by microarray profiling.

Dhahbi JM, Mote PL, Fahy GM, Spindler SR.

Physiol Genomics. 2005 Nov 17;23(3):343-50. Epub 2005 Sep 27.

PMID: 16189280

12. Temporal linkage between the phenotypic and genomic responses to caloric restriction.

Dhahbi JM, Kim HJ, Mote PL, Beaver RJ, Spindler SR.

Proc Natl Acad Sci U S A. 2004 Apr 13;101(15):5524-9. Epub 2004 Mar 25.

PMID: 15044709

13. Additive regulation of hepatic gene expression by dwarfism and caloric restriction.

Tsuchiya T, **Dhahbi JM**, Cui X, Mote PL, Bartke A, Spindler SR.

Physiol Genomics. 2004 May 19;17(3):307-15.

PMID: 15039484

14. Hepatic gene expression profiling of streptozotocin-induced diabetes.

Dhahbi JM, Mote PL, Cao SX, Spindler SR.

Diabetes Technol Ther. 2003;5(3):411-20.

PMID: 12828825

15. Postprandial induction of chaperone gene expression is rapid in mice.

Dhahbi JM, Cao SX, Mote PL, Rowley BC, Wingo JE, Spindler SR.

J Nutr. 2002 Jan;132(1):31-7.

PMID: 11773504

16. Genomic profiling of short- and long-term caloric restriction effects in the liver of aging mice.

Cao SX, **Dhahbi JM**, Mote PL, Spindler SR.

Proc Natl Acad Sci U S A. 2001 Sep 11;98(19):10630-5. Epub 2001 Sep 4.

PMID: 11535822

17. Chaperone-mediated regulation of hepatic protein secretion by caloric restriction.

Dhahbi JM, Cao SX, Tillman JB, Mote PL, Madore M, Walford RL, Spindler SR.

Biochem Biophys Res Commun. 2001 Jun 8;284(2):335-9.

PMID: 11394882

18. Caloric restriction alters the feeding response of key metabolic enzyme genes.

Dhahbi JM, Mote PL, Wingo J, Rowley BC, Cao SX, Walford RL, Spindler SR.

Mech Ageing Dev. 2001 Jul 31;122(10):1033-48.

PMID: 11389922

19. Calories and aging alter gene expression for gluconeogenic, glycolytic, and nitrogen-metabolizing enzymes.

Dhahbi JM, Mote PL, Wingo J, Tillman JB, Walford RL, Spindler SR.
Am J Physiol. 1999 Aug;277(2 Pt 1):E352-60.

PMID: 10444432

20. Caloric intake alters the efficiency of catalase mRNA translation in the liver of old female mice.

Dhahbi JM, Tillman JB, Cao S, Mote PL, Walford RL, Spindler SR.
J Gerontol A Biol Sci Med Sci. 1998 May;53(3):B180-5.

PMID: 9597041

21. Dietary energy tissue-specifically regulates endoplasmic reticulum chaperone gene expression in the liver of mice.

Dhahbi JM, Mote PL, Tillman JB, Walford RL, Spindler SR.

J Nutr. 1997 Sep;127(9):1758-64.

PMID: 9278556

22. Dietary calorie restriction in mice induces carbamyl phosphate synthetase I gene transcription tissue specifically.

Tillman JB, **Dhahbi JM**, Mote PL, Walford RL, Spindler SR.

J Biol Chem. 1996 Feb 16;271(7):3500-6.

PMID: 8631954

23. Dietary energy restriction in mice negatively regulates hepatic glucose-regulated protein 78 (GRP78) expression at the posttranscriptional level.

Tillman JB, Mote PL, **Dhahbi JM**, Walford RL, Spindler SR.

J Nutr. 1996 Feb;126(2):416-23.

PMID: 8632214