

BIOGRAPHICAL SKETCH

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NAME Towia Aron Libermann	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME (credential, e.g., agency login) towial			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Lessing Gymnasium, Frankfurt/M, Germany	Abitur(BA)	1974	General
Federal Institute of Technology, Zurich	Dip(M.Sc.)	1980	Biochemistry
Weizmann Institute of Science & Technology	Abitur(BA)	1986	Immunology

A. Positions and Honors.

Positions and Employment

- 1980-1981 Research Assistant, Dept. of Biochemistry, Federal Institute of Technology, Zurich (ETHZ), Zurich Switzerland
- 1986-1987 Senior Investigator, Biotechnology Research Center, Rorer, Rockville, MD
- 1991-2000 Assistant Professor, Dept. of Medicine, Divisions of Immunology and Nephrology, Beth Israel Hospital and Harvard Medical School, Boston, MA
- 1997-present Investigator, Rheumatology, Beth Israel-Deaconess Medical Center, Boston, MA
- 2000-present Associate Professor, Dept. of Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA
- 2000-present Director, Beth Israel Deaconess Medical Center Genomics Center
- 2004-present Director, Dana Farber/Harvard Cancer Center Cancer Proteomics Core
- 2007-present Investigator, Interdisciplinary Medicine and Biotechnology, Beth Israel-Deaconess Medical Center, Boston, MA

Other Experience and Professional Memberships

- 1975-1980 Research Training, Dept. of Biochemistry, Federal Institute of Technology, Zurich (ETHZ), Zurich Switzerland
- 1981-1986 Graduate Student, Dept. of Chemical Immunology, The Weizmann Institute of Science and Technology, Rehovot Israel
- 1987-1990 Postdoctoral Fellow, Whitehead Institute for Biomedical Research, Cambridge, MA
- 1999 Founder and Scientific Advisor of Tolerance Pharmaceuticals, Inc.

Honors

- 1985 Leukemia Society of America Fellowship
- 1992- Ad Hoc Reviewer on many NIH Study Sections
- 1995 American Diabetes Association Research Award
- 1996 Juvenile Diabetes Foundation Research Award
- 1997, 1998 The Alexis A. Boss Chair of Research of The Brain Tumor Society
- 1998 CaPCURE Research Award
- 2007 Prostate Cancer Foundation Research Award
- 2007- Associate Editor, Cancer Research
- 2008- Editor-in-Chief, Open Proteomics Journal

B. Selected peer-reviewed publications (in chronological order).

1. Mitsiades CS, Mitsiades NS, McMullan CJ, Poulaki V, Shringarpure R, Akiyama M, Hideshima T, Chauhan D, Joseph M, Libermann TA, Garcia-Echeverria C, Pearson MA, Hofmann F, Anderson KC, Kung AL. Inhibition of the insulin-like growth factor receptor-1 tyrosine kinase activity as a therapeutic strategy for multiple myeloma, other hematologic malignancies, and solid tumors. *Cancer Cell*. 2004 Mar; 5(3):221-30.

2. Hong YK, Foreman K, Shin JW, Hirakawa S, Curry CL, Sage DR, Libermann T, Dezube BJ, Fingerroth JD, Detmar M. Lymphatic reprogramming of blood vascular endothelium by Kaposi sarcoma-associated herpesvirus. *Nat Genet.* 2004; 36 (7): 683-685.
3. Zerbini LF, Wang Y, Czibere A, Correa RG, Cho JY, Ijiri K, Wei W, Joseph M, Gu X, Grall F, Goldring MB, Zhou J and Libermann TA. NF- κ B mediated repression of GADD45a and g is essential for cancer cell survival. *Proc Natl Acad Sci U S A.* 2004; 101 (37): 13618-13623.
4. Aivado M, Spentzos D, Alterovitz G, Otu HH, Grall F, Giagounidis AA, Wells M, Cho JY, Germing U, Czibere A, Prall WC, Porter C, Ramoni MF, Libermann TA. Optimization and evaluation of surface-enhanced laser desorption/ionization time-of-flight mass spectrometry (SELDI-TOF MS) with reversed-phase protein arrays for protein profiling. *Clin Chem Lab Med.* 2005;43(2):133-40. PMID: 15843205
5. Jones J, Otu H, Spentzos D, Kolia S, Inan M, Beecken WD, Fellbaum C, Gu X, Joseph M, Pantuck AJ, Jonas D, Libermann TA. Gene signatures of progression and metastasis in renal cell cancer. *Clin Cancer Res.* 2005;11:5730-5739.
6. Spentzos D, Levine DA, Kolia S, Otu H, Boyd J, Libermann TA, Cannistra SA. Unique gene expression profile based on pathologic response in epithelial ovarian cancer. *J Clin Oncol.* 2005;23:7911-7918.
7. Traum AZ, Wells MP, Aivado M, Libermann TA, Ramoni MF, Schachter AD. SELDI-TOF MS of quadruplicate urine and serum samples to evaluate changes related to storage conditions. *Proteomics.* 2006 Mar;6(5):1676-80. PMID: 16447157
8. Venkatesha S, Toporsian M, Lam C, Hanai JI, Mammoto T, Kim YM, Bdolah Y, Lim KH, Yuan HT, Libermann TA, Stillman IE, Roberts D, D'Amore PA, Epstein FH, Sellke FW, Romero R, Sukhatme VP, Letarte M, Karumanchi SA. Soluble endoglin contributes to the pathogenesis of preeclampsia. *Nat Med.* 2006;12:642-649
9. Steidl U, Rosenbauer F, Verhaak RG, Gu X, Ebralidze A, Otu HH, Klippel S, Steidl C, Bruns I, Costa DB, Wagner K, Aivado M, Kobbe G, Valk PJ, Passegue E, Libermann TA, Delwel R, Tenen DG. Essential role of Jun family transcription factors in PU.1 knockdown-induced leukemic stem cells. *Nat Genet.* 2006; 38(11):1269-77.
10. Zerbini LF, Czibere A, Wang Y, Correa RG, Otu H, Joseph M, Takayasu Y, Silver M, Gu X, Ruchusatsawat K, Li L, Sarkar D, Zhou JR, Fisher PB, and Libermann TA. A Novel Pathway Involving Melanoma Differentiation Associated Gene-7/Interleukin-24 Mediates Nonsteroidal Anti-inflammatory Drug-Induced Apoptosis and Growth Arrest of Cancer Cells. *Cancer Res.* 2006 Dec 15;66(24):11922-31.
11. Khurana M, Traum AZ, Aivado M, Wells MP, Geurrero M, Grall F, Libermann TA and Schachter AD. Urine proteomic profiling of pediatric nephrotic syndrome. *Pediatr. Nephrol.* 2006; Sep;21(9):1257-1265.
12. Otu HH, Can H, Spentzos D, Nelson RG, Hanson RL, Looker HC, Knowler WC, Monroy M, Libermann TA, Karumanchi SA, Thadhani R. Prediction of diabetic nephropathy using urine proteomic profiling 10 years prior to development of nephropathy. *Diabetes Care.* 2007 Mar;30(3):638-43. PMID: 17327333
13. Aivado M, Spentzos D, Germing U, Alterowitz G, Meng XY, Grall F, Giagounidis AAN, Klement G, Steidl U, Otu HH, Czibere A, Prall WC, Iking-Konert C, Shayne M, Ramoni MF, Gattermann N, Haas R, Mitsiades CS, Fung ET and Libermann TA. Serum proteome profiling detects myelodysplastic syndromes and identifies CXC chemokine ligands 4 and 7 as markers for advanced disease. *Proc Natl Acad Sci U S A.* 2007 Jan 23;104(4):1307-12.
14. Kennedy AR, Pissios P, Otu H, Xue B, Asakura K, Furukawa N, Marino FE, Liu F, Kahn BB, Libermann TA, Maratos-Flier E. A High Fat, Ketogenic Diet, Induces a Unique Metabolic State in Mice. *Am J Physiol Endocrinol Metab.* 2007; Jun;292(6):E1724-39. Epub 2007 Feb 13.
15. Huh K, Zhou X, Hayakawa H, Cho JY, Libermann TA, Jin J, Harper JW, Munger K. Human papillomavirus type 16 E7 oncoprotein associates with the cullin 2 ubiquitin ligase complex, which contributes to degradation of the retinoblastoma tumor suppressor. *J Virol.* 2007 Sep;81(18):9737-47. Epub 2007 Jul 3. PMID: 17609271
16. Gu X, Zerbini LF, Otu HH, Bhasin M, Yang Q, Joseph MG, Grall F, Onatunde T, Correa RG, and Libermann TA. Reduced PDEF expression increases invasion and expression of mesenchymal genes in prostate cancer cells. *Cancer Res* 2007; 67(9): 4219-26.
17. Zhang X, Zhang L, Yang H, Huang X, Otu H, Libermann TA, DeWolf WC, Khosvari-Far R, and Olumi AF. C-Fos as a pro-apoptosis agent in TRAIL-induced apoptosis in prostate cancer cells. *Cancer Res.* 2007; 67:9425-34.
18. Zinkin NT, Grall F, Bhaskar K, Otu HH, Spentzos D, Kalmowitz B, Wells M; Guerrero M, Asara J; Libermann TA*, and Afdhal NH*. Serum proteomics and biomarkers in hepatocellular carcinoma and chronic liver disease. *Clin. Cancer Res.* 2008; 14(2): 470-477. PMID: 18223221

19. Jones J, Otu HH, Grall F, Spentzos D, Can H, Aivado M, Belldegrun AS, Pantuck AJ, and Libermann TA. Proteomic identification of Interleukin-2 therapy response in metastatic renal cell cancer. *J. Urol.* 2008; 179(2): 730-6. PMID: 18082202
20. Haram KM, Peltier HJ, Lu B, Bhasin M, Otu HH, Choy B, Regan M, Libermann TA, Latham GJ, Sanda MG, Arredouani MS. Gene expression profile of mouse prostate tumors reveals dysregulations in major biological processes and identifies potential murine targets for preclinical development of human prostate cancer therapy. *Prostate* 2008; 68: 1517-1530. PMID: 18668517
21. Dusek JA, Otu HH, Wohlhueter AL, Bhasin M, Zerbini LF, Joseph MG, Benson H, Libermann TA. Genomic counter-stress changes induced by the relaxation response. *PLoS ONE.* 2008 Jul 2;3(7):e2576. PMID: 18596974
22. Koulmanda M, Bhasin M, Hoffman L, Fan Z, Qipo A, Shi H, Bonner-Weir S, Putheti P, Degauque N, Libermann TA, Auchincloss Jr. H, Flier JS, and Strom TB. Curative and beta cell regenerative effects of alpha1 antitrypsin treatment in autoimmune diabetic NOD mice. *Proc Natl Acad Sci U S A.* 2008 Oct 21;105(42):16242-7. PMID: 18852471
23. Tworoger SS, Spentzos D, Grall FT, Libermann TA*, Hankinson SE*. Reproducibility of proteomic profiles over three years in postmenopausal women not taking postmenopausal hormones. *Cancer Epidemiol Biomarkers Prev.* 2008; 17(6): 1480-5. PMID: 18559564
24. Cho JY, Lee M, Ahn JM, Park ES, Cho JH, Kim BG, Heo SH, Park HJ, Zerbini L, Hwang D, and Libermann T. Proteomic analysis of a PDEF Ets Transcription Factor-interacting Protein Complex. *J. Proteome Res.* 2009: in press.

C. Research Support.

Ongoing Research Support

1P01HL076540 (Aird) Role: PI of Genomics Core 07/01/04 – 05/31/09
NIAID/NHLBI

Endothelial Cell Phenotypes in Health and Disease (Core C)

The Genomics Core provides a comprehensive integrated genomics approach for program project labs.

JDRF Center Grant (Strom) Role: PI of Core B

Juvenile Diabetes Research Foundation 04/01/06 – 03/31/11

A pipeline to induce tolerance (Core B)

The Core provides the molecular means to identify the status of islets for transplantation into diabetes patients.

P30 CA06510 (Bentz) Role: PI of Proteomics Core 12/01/05-11/30/10
NIH/NCI

Cancer Proteomics Core

The goal is to provide proteomics technologies to DF/HCC investigators.

PC051217 (Zerbini) Role: Investigator 03/20/06-03/19/09
Department of Defense

New Approaches for Prostate Cancer Combination Therapy

The goal is to decipher the pathways involved in prostate cancer apoptosis induction by Sulindac sulfide.

Prostate Cancer Foundation (Gu) Role: Investigator 04/01/07-03/31/09

Deciphering the PDEF role in Prostate Gland development and Prostate Carcinogenesis

The goal is to use knockout mice to determine the PDEF role in prostate cancer.

1R21 DK076873 (Schuppan) Role: Investigator 09/06/07-08/31/09

NIH - Identification of Serum Markers of Liver Fibrogenesis/Fibrosis by Proteomics

The goal is to identify liver fibrosis biomarkers.

1R21 AR054442 (Rigby) Role: Investigator 9/21/07-07/31/09

NIH- Structure-based in silico screen for small molecule inhibitors of Ets-1 activity

The goal is to identify small molecule inhibitors of Ets-1.

P50 CA101942 DFCI/HCC (Atkins) Role: Investigator 6/01/07-05/31/09

NCI/NIH

Renal Cancer SPORE

The goal is to provide genomics and bioinformatics support.

UL1RR025758 (Nadler) Role: Investigator

05/19/08-04/30/13

NIH - Harvard Clinical and Translational Sciences Award (CTSA)

The goal is to consult on genomics and proteomics technologies.

Completed Research Support

1RO1 CA85467, Libermann (PI) Role: PI

04/01/01 - 03/31/06

NCI/NIH - Role of the novel prostate- specific transcription factor, PDEF, in prostate cancer

The goal is to characterize the PDEF role in prostate cancer.

PO1 CA92664-01 (Dvorak) Role: PI of Genomics Core

06/01/02 – 05/30/07

NCI/NIH

Spatial and Temporal Regulation of Angiogenesis (Core)

The Genomics Core provides a comprehensive genomics approach for the various program project labs.

DF/HCC Prostate Cancer SPORE (Libermann) Role: PI

05/01/06 - 04/30/07

TMPRSS2/ERG translocations as targets for therapy in prostate cancer

The goal is to identify small molecule inhibitors of TMPRSS2/ERG.

1R21 CA107352-02 (Libermann) Role: PI

05/01/05 – 04/30/08

NIH/NIAID

Novel Approaches to Gene Profiling in Ovarian Cancer

The aims are to use microarray analysis to identify patients with early stage EOC at high risk of relapse.

1P50 CA101942 (Atkins) Role: Investigator

10/01/04-05/31/08

NIH/NCI

Identification of molecular and immunologic correlates of RCC prognosis and responsiveness to therapy

Aims are to identify gene signatures of IL-2 response in renal cancer patients.

DF/HCC Renal Cancer SPORE (Libermann) Role: PI

06/01/06-05/31/08

NIH/NCI 1P50 CA101942

The tyrosine kinase receptor Axl, a novel therapeutic target in renal cell cancer

The aim is to determine the role of Axl in renal cell cancer.

Prostate Cancer Foundation (Libermann) Role: PI

05/01/07-04/30/08

TMPRSS2/ERG translocations as targets for therapy in prostate cancer

The goal is to determine the biological function of TMPRSS2/ERG translocations in prostate cancer.

DF/HCC Breast Cancer SPORE (Libermann) Role: PI

09/01/05-08/31/07

AP1, FRA-1 and JunD, as novel therapeutic drug targets in breast cancer

The goal is to determine the role of AP-1 in breast cancer.

DFCI/HCC (Atkins) Role: Investigator

10/01/04-05/31/08

Renal SPORE Project 4

The goal is to identify a gene signature that can predict the response of renal cell cancer patients to IL-2.

DF/HCC Renal Cancer SPORE (Libermann) Role: PI

07/01/07-06/30/08

NCI/NIH - Identification of new drugs for treatment of RCC patients using the Connectivity Map database

OC060439 (Zerbini) Role: Investigator

09/20/06-09/14/08

Department of Defense

Cell cycle target-based therapy of ovarian cancer

The goal is to identify NSAIDs that induce apoptosis in quiescent ovarian cancer cells.