OMB No. 0925-0001 and 0925-0002 (Rev. 10/2021 Approved Through 01/31/2026)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
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NAME: David Gozal

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

POSITION TITLE: Professor

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 DateMM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- |
| Hebrew University of JerusalemBikur Cholim Hospital, Jerusalem, Israel Haifa Medical Center, Haifa, IsraelChildren’s Hospital Los AngelesChildren’s Hospital Los Angeles | MDPost-DocPost-Doc | 06/197906/198106/198806/199206/1993 | MedicineResident, PediatricsChief Resident, PediatricsPulmonology/SleepSpecial Resident PL3, Pediatrics |
|  |  |  |  |
| Georgetown University | MBA | 08/2015 | Business Administration |
| ESADE | MBA | 10/2015 | Global Business Strategy |
|  |  |  |  |

**A. Personal Statement**

My professional career has been dedicated to increasing the understanding of mechanisms underlying respiratory control and end-organ injury and adaptation to nocturnal hypoxia and sleep fragmentation using bench to bedside approaches. As a translational component part of such efforts, I have created preeminent sleep centers for adult and pediatric patients, and have attempted to understand how best to identify, diagnose, as well as palliate or reverse some of the potential consequences of sleep-disordered breathing. More specifically, my lab is focused on mechanisms underlying end-organ deficits associated with sleep apnea and sleep disorders in both cellular and murine models and in adult and developing humans. To this effect we have used multi-Omics approaches as well as incorporated biomarker discovery, metagenomics, AI-based assessments of large datasets, and focused exploration of mechanistic pathways. Our work over the years has translated into over 930 peer-reviewed publications and a H-index of 147 with over 95,000 citations. In addition to research endeavors, I have led and established training programs in respiratory and sleep medicine which have not only been accredited but also received designation of Program of Excellence by the American Academy of Sleep Medicine. Furthermore, in addition to training in excess of 150 clinical fellows and 80 pre-doctoral and post-doctoral research trainees who have gone on to excel in their academic careers, I have been a faculty member and mentor as well as an external advisor in several T32 grants and PI in a K12 grant focused on the OMICS of the Lung. Finally, we have conducted and continue to pursue previous investigative work focused on neurological, behavioral, vascular and metabolic consequences of sleep disorders.

1. Badran M, Puech C, Khalyfa A, Cortese R, Cataldo K, Qiao Z, **Gozal D**. Senolytic-facilitated Reversal of End-Organ Dysfunction in a Murine Model of Obstructive Sleep Apnea*. Am J Respir Crit Care Med.* 2024 Apr15;209(8):1001-1012. doi: 10.1164/rccm.202306-1101OC. PMID: 38113165.
2. Badran M, Khalyfa A, Ericsson A, Puech C, McAdams Z, Bender SB, **Gozal D**. Gut microbiota mediate vascular dysfunction in a murine model of sleep apnea: effect of probiotics. *Eur Respir J*. 2022 Aug 25:2200002. doi: 10.1183/13993003.00002-2022. Epub ahead of print. PMID: 36028255.
3. Javaheri S, Javaheri S, **Gozal D**, Campos-Rodriguez F, Martinez-Garcia MA, Mokhlesi B, Mehra R, McNicholas WT, Somers VK, Zee PC, Cistulli P, Malhotra A. Treatment of OSA and its Impact on Cardiovascular Disease, Part 2: JACC State- of-the-Art Review*. J Am Coll Cardiol.* 2024 Sep 24;84(13):1224-1240. doi:10.1016/j.jacc.2024.07.024. PMID: 39293885.
4. Mazzotti DR, Waitman LR, Miller J, Sundar KM, Stewart NH, **Gozal D**, Song X; Greater Plains Collaborative. Positive Airway Pressure, Mortality, and Cardiovascular Risk in Older Adults With Sleep Apnea. *JAMA Netw Open*. 2024 Sep 3;7(9):e2432468. doi: 10.1001/jamanetworkopen.2024.32468. PMID: 39259540.

**B. Positions and Honors**

07/23-present Dean, Joan C. Edwards School of Medicine, Vice-President for Health Affairs, Marshall University

05/2021 Lifetime Achievement Award, Assembly of Pediatrics, American Thoracic Society

03/2019 Doctor Honoris Causa, University of Barcelona, Spain

02/2019 2019 Edwin L. Kendig Jr Award by the American Academy of Pediatrics Section on Pediatric Pulmonology and Sleep Medicine

10/2018 Doctor Honoris Causa, University of Lleida, Spain

8/2018-2023 Chair, Department of Child Health, University of Missouri, School of Medicine

06/2016 National Sleep Foundation Lifetime Achievement Award

2013-2018 Secretary Treasurer, American Thoracic Society, 2014- Vice-President, 2015 – President-Elect, 2016 – President, 2017 – Past-President

2013-present Regular Member, Neuroendocrinology, Neuroimmunology, Rhythms and Sleep (NNRS) Study Section, Integrative, Functional and Cognitive Neuroscience IRG, Center for Scientific Review

2013 William C. Dement Academic Achievement Award of the American Academy of Sleep Medicine

2009-2014 Professor and Chairman, Department of Pediatrics, The University of Chicago, Chicago, IL

2004 Special Lecture, Society for Neuroscience Meeting

2002 J. Burns Amberson Lecture, Keynote Speaker, American Thoracic Society Annual Conference

2000-2004 Regular Member, Respiratory and Applied Physiology Study Section, NIH

1999-2009 Children’s Foundation Chair for Pediatric Research, Professor of Pediatrics, Pharmacology and

Toxicology, University of Louisville

1997-1999 Constance Kaufman Professor of Pediatrics & Physiology, Tulane University School of Medicine

1994-1997 Associate Professor of Pediatrics & Physiology, Tulane University School of Medicine

1993-1994 Associate Research Anatomist, UCLA

1991-1993 Visiting Research Assistant, Dept. Anatomy & Cell Biology, UCLA

1991-1994 Assistant Professor of Pediatrics, USC School of Medicine

1990 Chevalier de l'Ordre du Merite du Cameroun (Knight of the Order of Merit of Cameroon)

1988-1997 Associate Professor of Exercise Physiology, National Institute of Youth and Sports, Cameroon

1988-1990 Medical Consultant to the Presidency of Cameroon

1983 Dr. Joseph Shmerler Award, M.D. Thesis, Hebrew University of Jerusalem, Israel

1982-1986 Israel Medical Corps

**Editorial responsibilities:** Deputy Editor-in-Chief for the journal SLEEP, Associate Editor for European Respiratory Journal, Frontiers in Neurology, Frontiers in Psychiatry; Member of editorial boards of >20 journals in the field of sleep or related topics.

**C. Contributions to Science**

**One of my significant discoveries was that we described for the first time widespread brain activation patterns of the brain during conditions associated with ubiquitous respiratory diseases such as sleep apnea, hypoxia, respiratory loads, and hypercapnia, and contributed to the current modern understanding widespread CNS regions mediating the control of breathing in mammalian species, including man.**

1. **Gozal D, Omidvar O, Kirlew KA, Hathout GM, Hamilton R, Lufkin RB, Harper RM. Identification of human brain regions underlying responses to resistive inspiratory loading with functional magnetic resonance imaging. Proc Natl Acad Sci U S A. 1995 Jul 3;92(14):6607-11. PubMed PMID: 7604040; PubMed Central PMCID: PMC41567.**
2. **Gozal D, Omidvar O, Kirlew KA, Hathout GM, Lufkin RB, Harper RM. Functional magnetic resonance imaging reveals brain regions mediating the response to resistive expiratory loads in humans. J Clin Invest. 1996 Jan 1;97(1):47-53. PubMed PMID: 8550849; PubMed Central PMCID: PMC507061.**

**We also discovered that S-nitrosothiols in erythrocytes govern the hypoxic ventilatory response via cross-talk with brainstem neurons, and therefore identified for the first time how non-neural processes can affect neuronal activity involved in hypoxic signaling.**

1. **Lipton AJ, Johnson MA, Macdonald T, Lieberman MW, Gozal D\*, Gaston B\*. S-nitrosothiols signal the ventilatory response to hypoxia. Nature. 2001 Sep 13;413(6852):171-4. PubMed PMID: 11557982. (\* - equal senior author contributors).**

**My seminal transformational work originates from his demonstration that sleep apnea reduces academic performance of children and is reversible with timely and appropriate treatment. However, if left untreated it may lead to long-term deleterious learning consequences.**

1. **Gozal D. Sleep-disordered breathing and school performance in children. Pediatrics. 1998 Sep;102(3 Pt 1):616-20. PubMed PMID: 9738185.**
2. **Gozal D, Pope DW Jr. Snoring during early childhood and academic performance at ages thirteen to fourteen years. Pediatrics. 2001 Jun;107(6):1394-9. PubMed PMID: 11389263.**

**We then developed cellular and rodent models of sleep apnea, through which we have dissected some of the fundamental mechanisms underlying CNS, cardiovascular, and metabolic morbidities, and are also exploring the role of sleep apnea in cancer biology.**

1. **Gozal D, Daniel JM, Dohanich GP. Behavioral and anatomical correlates of chronic episodic hypoxia during sleep in the rat. J Neurosci. 2001 Apr 1;21(7):2442-50. PubMed PMID: 11264318.**
2. **Soukhova-O'Hare GK, Shah ZA, Lei Z, Nozdrachev AD, Rao CV, Gozal D. Erectile dysfunction in a murine model of sleep apnea. Am J Respir Crit Care Med. 2008 Sep 15;178(6):644-50. doi: 10.1164/rccm.200801-190OC. Epub 2008 Jun 5. PubMed PMID: 18535258; PubMed Central PMCID: PMC2542437.**
3. **Hakim F, Wang Y, Zhang SX, Zheng J, Yolcu ES, Carreras A, Khalyfa A, Shirwan H, Almendros I, Gozal D. Fragmented sleep accelerates tumor growth and progression through recruitment of tumor-associated macrophages and TLR4 signaling. Cancer Res. 2014 Mar 1;74(5):1329-37. doi: 10.1158/0008-5472.CAN-13-3014. Epub 2014 Jan 21. PubMed PMID: 24448240; PubMed Central PMCID: PMC4247537.**
4. **Zhang SX, Khalyfa A, Wang Y, Carreras A, Hakim F, Neel BA, Brady MJ, Qiao Z, Hirotsu C, Gozal D. Sleep fragmentation promotes NADPH oxidase 2-mediated adipose tissue inflammation leading to insulin resistance in mice. Int J Obes (Lond). 2014 Apr;38(4):619-24. doi: 10.1038/ijo.2013.139. Epub 2013 Jul 30. PubMed PMID: 23897221; PubMed Central PMCID: PMC3907464.**

**We have also translated those discoveries to the clinic and have led the field in identifying biomarkers for simplified diagnostic approaches and detection of differential susceptibility among patients with sleep apnea.**

1. **Gozal D, Jortani S, Snow AB, Kheirandish-Gozal L, Bhattacharjee R, Kim J, Capdevila OS. Two-dimensional differential in-gel electrophoresis proteomic approaches reveal urine candidate biomarkers in pediatric obstructive sleep apnea. Am J Respir Crit Care Med. 2009 Dec 15;180(12):1253-61. doi: 10.1164/rccm.200905-0765OC. Epub 2009 Sep 24. PubMed PMID: 19797158; PubMed Central PMCID: PMC2796735.**
2. **Gozal D, Khalyfa A, Capdevila OS, Kheirandish-Gozal L, Khalyfa AA, Kim J. Cognitive function in prepubertal children with obstructive sleep apnea: a modifying role for NADPH oxidase p22 subunit gene polymorphisms? Antioxid Redox Signal. 2012 Jan 15;16(2):171-7. doi: 10.1089/ars.2011.4189. Epub 2011 Oct 12. PubMed PMID: 21902598; PubMed Central PMCID: PMC3250922.**

**Complete list of published work on:**

<http://www.ncbi.nlm.nih.gov/pubmed/?term=gozal+d>

**or** <http://www.ncbi.nlm.nih.gov/sites/myncbi/1RK7R6zea6n/bibliography/9796129/public/?sort=date&direction=descending>