

Curriculum Vitae
Zachary A. Oaks MD, PhD

ACADEMIC TIMELINE

UNC Hospitals, Chapel Hill, NC

Radiation Oncology Resident, July 2019-Current

St. Joseph's Hospital Syracuse, NY

Transitional Year Resident, July 2018-June 2019

SUNY Upstate Medical University, Syracuse, NY

MD and a PhD in Biochemistry and Molecular Biology, May 2009-May 2018, graduated with honors, cum laude

Northeastern University, Boston, MA

Bachelor of Science in Biochemistry, August 2004-May 2009, graduated with honors, summa cum laude

PROFESSIONAL EXPERIENCE

Infinity Pharmaceuticals Cambridge, MA

Research Technician for in vivo Pharmacology January 2008-May 2009

- Participated in pre-clinical trials for the hedgehog pathway inhibitor saridegib

EMD Serono, Billerica, MA

Research Technician for Drug Development January 2007-June 2007

- Performed *in vivo* studies to study T cell activation gene profiles in early studies of PD-1/PD-L1 discovery
- Tested new biological and small molecule drugs for efficacy *in vitro* for PD-1/PD-L1 inhibition

Harvard Medical School, Cambridge, MA

Research Technician/Intern January 2006-August 2006

- Assisted optimization and development of key biomarker discovery pipelines in partnership with Massachusetts General Hospital, Brigham and Women's Hospital, and Beth Israel Deaconess Medical Center
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PUBLICATIONS

1. Randall KL, Argoti D, Paonessa JD, Ding Y, **Oaks Z**, Zhang Y, Vouros P. An improved liquid chromatography-tandem mass spectrometry method for the quantification of 4-aminobiphenyl DNA adducts in urinary bladder cells and tissues. *J Chromatogr A*. 2010 Jun 18;1217(25):4135-43.
2. Perl A, Hanczko R, Telarico T, **Oaks Z**, Landas S. Oxidative stress, inflammation and carcinogenesis are controlled through the pentose phosphate pathway by transaldolase. *Trends Mol Med*. 2011 Jul;17(7):395-403.
3. Caza TN, Fernandez DR, Talaber G, **Oaks Z**, Haas M, Madaio MP, Lai Z, Miklossy G, Singh RR, Chudakov DM, Malorni W, Middleton F, Banki K, and Perl A. HRES-1/RAB4-mediated depletion of Drp1 impairs mitochondrial homeostasis and represents a target for treatment in SLE. *Ann. Rheum. Dis*. 2014 Oct;73(10):1888-97.
4. **Oaks Z** and Perl, A. Metabolic control of the epigenome in systemic lupus erythematosus. *Autoimmunity*, 2014 Jun;47(4):256-64.
5. Talaber G, Miklossy G, **Oaks Z**, Liu Y, Tooze SA, Chudakov DM, Banki K, Perl A. HRES-1/Rab4 Promotes the Formation of LC3(+) Autophagosomes and the Accumulation of Mitochondria during Autophagy. *PLoS One*. 2014 Jan 3;9(1):e84392.
6. **Oaks Z** and Perl A. TALDO1 (transaldolase 1). *Atlas Genet Cytogenet Oncol Haematol*. Feb 2014; 18(2).
7. Caza T, **Oaks Z**, Perl A. Interplay of Infections, Autoimmunity, and Immunosuppression in Systemic Lupus Erythematosus. *Int Rev Immunol*. 2014 Jul-Aug;33(4):330-63.
8. Doherty E, **Oaks Z**, Perl A. Increased mitochondrial electron transport chain activity at complex I is regulated by N-acetylcysteine in lymphocytes of patients with systemic lupus erythematosus. *Antioxid Redox Signal*. 2014 Jul 1;21(1):56-65.
9. Perl A, Hanczko R, Lai Z, **Oaks Z**, Kelly R, Borsuk R, Asara JM, Phillips PE. Comprehensive metabolome analyses reveal N-acetylcysteine responsive accumulation of kynurenine in systemic lupus erythematosus: implications for activation of the mechanistic target of rapamycin. *Metabolomics*. 2015;11(5):1157-1174.
10. Liu Y, Yu J, **Oaks Z**, Marchena-Mendez I, Francis L, Bonilla E, Aleksiejuk P, Patel J, Banki K, Landas SK. and Perl A. Liver injury correlates with biomarkers of autoimmunity and disease activity and represents an organ system involvement

in patients with systemic lupus erythematosus. *Clin. Immunol.* 2015 Oct;160(2):319-27.

11. **Oaks Z**, Winans T, Caza T, Fernandez D, Liu Y, Landas SK, Banki K, Perl A. Mitochondrial Dysfunction in the Liver and Antiphospholipid Antibody Production Precede Disease Onset and Respond to Rapamycin in Lupus-Prone Mice. *Arthritis Rheumatol.* 2016 Nov;68(11):2728-2739.
12. **Oaks Z**, Winans T, Huang N, Banki K, Perl A. Activation of the Mechanistic Target of Rapamycin in SLE: Explosion of Evidence in the Last Five Years. *Curr Rheumatol Rep.* 2016 Dec;18(12):73.
13. Minchenberg SB, Chaparala G, **Oaks Z**, Banki K, Perl A. Systemic lupus erythematosus-myasthenia gravis overlap syndrome: Presentation and treatment depend on prior thymectomy. *Clin Immunol.* 2018 Sep;194:100-104.
14. **Oaks Z**, Jimah J, Grossman CC, Beckford M, Kelly R, Banerjee S, Niland B, Miklossy G, Kuloglu Z, Kansu A, Lee W, Szonyi L, Banki K, Perl A. Transaldolase haploinsufficiency in subjects with acetaminophen-induced liver failure. *J Inher Metab Dis.* 2020 May;43(3):496-506.

BOOK CHAPTERS

1. **Oaks Z**, Shen CJ, Sheth S, Gupta GP, Chera B. 2021. *Biomarkers in Head and Neck Cancer*. In: *Multidisciplinary Management of Head and Neck Cancer: Contemporary Applications and Techniques*. Submitted.

ABSTRACTS

1. 20th EORTC-NCI-AACR Symposium on Molecular Targets and Cancer Therapeutics, Geneva, Switzerland. "Activity of IPI-926, a novel inhibitor of the HH pathway, in subcutaneous and orthotopically implanted xenograft tumors that express SHH ligand." Sydor J, Travaglione V, Deyneko I, **Oaks Z**, Pink M, Proctor J, Read M, McGovern K, Palombella V, MacDougall J.
2. American Society for Mass Spectrometry, Philadelphia, PA. May 2009. Poster. "LC-MS Detection of 4-ABP-DNA Adduct Formation in Bladder Cells and Tissues." Randall K, Argoti D, Paonessa JD, Ding Y, **Oaks Z**, Zhang Y, Vouros P.
3. Conference on Small Molecule Science (CoSMoS), Boston, MA. August 2009. Poster. "LC-MS Detection of 4-ABP-DNA Adduct Formation in Bladder Cells and Tissues." Randall K, Argoti D, Paonessa JD, Ding Y, **Oaks Z**, Zhang Y, Vouros P.
4. National MD/PhD Conference, Keystone, CO. July 7, 2012. Poster. "Transaldolase deficiency increases mitochondrial energy efficiency by allowing for greater O₂ consumption, transmembrane potential, and ATP production" **Oaks Z**, Miklossy G, Perl A.
5. American College of Rheumatology Annual Meeting, Washington D.C. November 12, 2012. Poster. "Functional and biochemical differences in isolated mitochondria in lupus-prone mice prior to disease onset." **Oaks Z**, Caza T, Perl A.
6. American College of Rheumatology Annual Meeting, Washington D.C. November 13, 2012. Poster. "HRES-1/RAB4-Mediated loss of Drp1 Inhibits Mitophagy, Promotes Accumulation of Mitochondria and Serves as Target for Treatment in SLE." Caza T, **Oaks Z**, Talaber G, Haas M, Madaio M, Perl A.
7. MD/PhD Tri-institutional Conference, Buffalo, NY. October 19, 2013. Oral Presentation. "Functional and biochemical differences in isolated mitochondria in lupus-prone mice prior to disease onset." **Oaks Z**, Caza T, Liu Y, Perl A.
8. 9th International Congress on Autoimmunity, Nice, France. March 27, 2014. Oral Presentation. "Mitochondrial dysfunction in the liver of lupus-prone mice prior to disease onset." **Oaks Z**, Caza T, Liu Y, Perl A.
9. The International Liver Conference, London, United Kingdom. April 10, 2014. Poster. "Aldose Reductase Contributes to Hepatocarcinogenesis in Transaldolase Deficiency." **Oaks Z**, Hanczko R, Beckford M, Chung SK, Landas SK, Asara JM, Perl A.
10. The European League Against Rheumatism Annual Conference, Paris, France. June 14, 2014. Oral Presentation. "Liver Mitochondria Dysfunction Precedes the Onset of SLE In Lupus-Prone Mice and is Ameliorated by Rapamycin and 3-PEHPC." **Oaks Z**, Caza T, Liu Y, Perl A.
11. American Physician Scientist Association North East Regional Meeting, Syracuse, NY. October 3, 2015. Poster. "Transaldolase deficiency protects from MOG EAE and induces mTOR activation in a murine model." **Oaks Z**, Huang N, Lai Z, Perl A.
12. American College of Rheumatology Annual Meeting, San Francisco, CA. November 9, 2015. Poster. "Oxidative Stress Protects Against Nephritis Induced By Chronic Graft Versus Host Disease." **Oaks Z**, Bartos A, Beckford M, Haas M, Perl A.
13. The Liver Meeting, San Francisco, CA. November 17, 2015. Poster. "Inactivation of Aldose Reductase Prevents NAFLD, NASH, and Hepatocarcinogenesis in Transaldolase Deficiency." **Oaks Z**, Hanczko R, Beckford M, Chung SK, Landas SK, Asara J, Perl A.
14. American College of Rheumatology Annual Meeting, Washington, D.C. November 15, 2016. Oral Presentation. "Rab4A Is Required for Development of Tregs, Restricts Antiphospholipid Antibody Production and Pro-Inflammatory Expansion of Macrophages and Neutrophils, and Blocks Pristane-Induced Intra-Alveolar Hemorrhage in a Mouse Model of SLE." **Oaks Z**, Winans T, Huang N, Blair S, Beckford M, Banki K, Perl A.

15. International Association for the Study of Lung Cancer Multidisciplinary Symposium in Thoracic Oncology, Chicago, IL. September 15, 2017. Poster. "Salvage Therapy for Relapse after Stereotactic Body Radiation for Stage I Lung Cancer." **Oaks Z**, Bogart J, Nsouli T, Aridgides P.
16. American College of Rheumatology Annual Meeting, San Diego, CA. November, 2017. Poster. "Rab4a control over glycolytic metabolism and T-cell lineage specification protects from intra-alveolar hemorrhage in mouse model of SLE." Huang N, **Oaks Z**, Winans T, Blair S, Zhiwei L, Banki K, Perl A.
17. ASTRO Annual Meeting. Virtual Meeting. October, 2020. Poster. "Sentinel lymph node biopsy versus axillary lymph node dissection in US women with breast cancer and persistently positive lymph nodes following neoadjuvant chemotherapy." **Oaks Z**, Goyal S, Liu Y, Reeder-Hayes K, Gupta GP, Patel SA, Royce TJ.
18. ASTRO Annual Meeting. Virtual Meeting. October, 2020. Poster. "PIK3CA mutations are not correlated with worse disease-free survival in early-stage cervical cancer treated with surgery and could be a target for overcoming resistance to chemoradiotherapy in locally advanced cervical cancer." **Oaks Z**, Tucker K, Beaty BT, Bae-Jump V, Weiner AA.
19. American College of Rheumatology Annual Meeting. Virtual Meeting. November, 2020. Poster. "Rab4A Activation Predisposes to Hepatitis in Spontaneous and Pristine-Induced Mouse Models of Systemic Lupus Erythematosus." Huang N, Patel A, **Oaks Z**, Perl A.
20. ASTRO Annual Meeting. October, 2021. Poster. "Incident Learning in a Radiation Oncology Practice during the COVID Era." Amos A, Sud S, **Oaks Z**, McGurk R, Dance M, Luciano A, Mazur L, Marks L, Chera B.

HONORS/AWARDS

- 2010 ACR REF/Abbott Health Professional Graduate Student Research Preceptorship
- 2014 EULAR Travel Bursary for Oral Presentation
- 2017 Kasten Aker Family Scholarship
- 2017 Dean's Letter of Commendation
- 2017 Alpha Omega Alpha Member

PROFESSIONAL AND LEADERSHIP ACTIVITIES

- 2015-2016 SUNY Upstate Medical School Admissions Interviewer
- 2015-2017 SUNY Upstate MD/PhD Admissions Committee Student Representative
- 2015-2018 SUNY Upstate MD/PhD Mentoring Program
- 2016 MD/PhD Tri-Institutional Conference Committee
- 2016 American Physician Scientist Association: National Public Relations Committee
- 2016-Present Northeastern University Honors Program Alumni Mentor
- 2018-2019 St. Joseph's Hospital Medical Education Committee Member
- 2020-2021 SpaceOAR training
- 2021 Optune Training

MEMBERSHIPS

- 2018 – present American Society of Radiation Oncology (ASTRO)
- 2018 – present American College of Radiology (ACR)