BIOGRAPHICAL SKETCH

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NAME: Ho, Allen Szu-Hao

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

POSITION TITLE: Associate Professor of Surgery; Director, Head and Neck Cancer Program

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
Harvard University (Cambridge, MA)	B.A.	06/2000	Neurobiology
National Institutes of Health (Bethesda, MD)	Fellowship	07/2004	Cancer Research
UCLA School of Medicine (Los Angeles, CA)	M.D.	06/2006	Medicine
Stanford University (Palo Alto, CA)	Internship	07/2007	General Surgery
Stanford University (Palo Alto, CA)	Residency	07/2011	Otolaryngology
Memorial Sloan Kettering Cancer Center (NY, NY)	Fellowship	01/2014	Head & Neck Surgical Oncology

A. Personal Statement

I am a head and neck surgical oncologist with a strong interest in translational research involving head and neck cancer pathogenesis. My current efforts focus on identifying novel immunologic and proteomic pathways that predict for survival and treatment resistance. My diverse basic science training has honed my interests in head and neck cancer, where I have successfully competed for multiple national grants and published first-author manuscripts. My overarching goal for this proposal is to refine these research interests in a team-oriented approach to robustly investigate patient-oriented questions in our field.

My research experience has coupled closely with my clinical training in head and neck oncology, which requires a comprehensive multidisciplinary approach to treat a challenging patient population. My current role as director of the head and neck cancer program involves synchronizing the various specialties (surgery, medical oncology, radiation oncology, swallow therapy, nutrition, dentistry) to optimize oncologic and functional outcomes, as well as to coordinate investigational translational research among these disciplines.

Preliminary data generated through collaborations with pathology, immunology, and proteomics have opened further lines of investigation detailed in this proposal. I recognize the team-based complexity associated with grant proposals, including the need for a pragmatic research plan, timeline, and budget. I am also experienced in bridging the working relationships between clinical and scientific teams that are crucial to ensure a translational project's completion. As such, our interdisciplinary group is prepared and committed to successfully execute the submitted proposal.

1. **Ho AS**, Kannan K, Roy DM, et al. The mutational landscape of adenoid cystic carcinoma. *Nature Genetics*. 2013 July; 45(7):791-8.
2. **Ho AS**, Ochoa A, Tepe J, et al. Genetic hallmarks of recurrent/metastatic adenoid cystic carcinoma. *Journal of Clinical Investigation*. 2019 Aug [Epub ahead of print].
3. **Ho AS**, Kim S, Tighiouart M, et al. Association of quantitative metastatic lymph node burden with survival in hypopharyngeal and laryngeal cancer. *JAMA Oncology*. 2017 Nov 30 [Epub ahead of print].
4. **Ho AS**, Kim S, Tighiouart M, et al. Metastatic lymph node burden and survival in oral cavity cancer. *Journal of Clinical Oncology*. 2017 Nov 1;35(31):3601-3609.

B. Positions and Honors

Positions

2011-2014 Senior Fellow and Instructor, Memorial Sloan Kettering Cancer Center (NY, NY)
2014-Present Assistant Professor of Surgery, Cedars-Sinai Medical Center (Los Angeles, CA)
2014-Present Director, Head & Neck Cancer Program, Cedars-Sinai Medical Center (Los Angeles, CA)
2014-Present Co-Director, Thyroid Cancer Program, Cedars-Sinai Medical Center (Los Angeles, CA)

Other Experience and Professional Memberships

2014-Present Member, Cedars-Sinai Cancer Quality Committee
2014-Present Ad hoc Reviewer, *Cancer*
2014-Present Ad hoc Reviewer, *Head & Neck*
2014-Present Ad hoc Reviewer, *Otolaryngology-Head & Neck Surgery*
2015-Present Ad hoc Reviewer, *Thyroid*
2015-2017 Member, American Thyroid Association (ATA) Development Committee
2015-Present Member, AAOHNS CORE Study Section

Honors

2017 Health Network Foundation Service Excellent Award
2012 American Head & Neck Society Poster Session: Honorable Mention
2012 AAOHNS Resident Leadership Grant
2011 Triological Society Resident Travel Award
2005 Howard Hughes Medical Institute (HHMI) Research Travel Grant
2004 Nathan R. Lazar Medical Scholarship

C. Contributions to Science

1. **Mutational characterization of adenoid cystic carcinoma**
   Adenoid cystic carcinoma is a rare, understudied salivary cancer. Cases have a high incidence of perineural invasion and distant lung metastases. Standard treatment involves surgical resection, as no chemotherapeutic agents are known to have clinical impact. During fellowship training in the Chan laboratory, I was able to help perform a multi-institutional, integrated analysis of 60 matched pair cases highlighted by next-generation exomic sequencing. The mutational analysis identified novel key pathways in this disease, including chromatin remodeling and PI3K. Such findings have been influential in our fundamental understanding of this disease, and in providing molecular targets for ongoing clinical trials.
   - **Ho AS**, Ochoa A, Tepe J, et al. Genetic hallmarks of recurrent/metastatic adenoid cystic carcinoma. *Journal of Clinical Investigation*. 2019 Aug [Epub ahead of print].
   - **Ho AS**, Kannan K, Roy DM, et al. The mutational landscape of adenoid cystic carcinoma. *Nature Genetics*. 2013 July; 45(7):791-8.

2. **Surveillance and management of advanced head and neck cancer**
   Head and neck malignancies that recur after treatment are enormously challenging to diagnose and treat, due to poor prognosis and the balance that must be struck between survival and function unique to this site.. These publications examine the factors that determine poor prognosis (e.g., metastatic nodal burden and disease-free interval), and the therapeutic roles of salvage surgery compared to reirradiation. This body of work has helped to establish a roadmap for surveillance and define the therapeutic ratio by which aggressive treatment may have benefit.
   - Zumsteg ZS, Luu M, Kim S, Tighiouart M, et al. Quantitative lymph node burden as a "very-high risk" factor identifying head and neck cancer patients benefiting from post-operative chemoradiation. *Annals of Oncology*. 2019 Jun 5. [Epub ahead of print].
   - **Ho AS**, Kim S, Tighiouart M, et al. Metastatic lymph node burden and survival in oral cavity cancer. *Journal of Clinical Oncology*. 2017 Nov 1;35(31):3601-3609.
   - Zumsteg ZS, Cook-Wiens G, Shiao SL, Lee NY, Mita A, **Ho AS**. Increasing incidence of oropharyngeal cancer among elderly patients in the United States. *JAMA Oncology* 2016 Dec 1;2(12):1617-1623.
   - **Ho AS**, Kraus DH, Ganly I, Lee NY, Shah JP, Morris LG. Decision-making in the management of recurrent head and neck cancer. *Head & Neck*. 2014 Jan; 36(1):144-51.
   - **Ho AS**, Tsao GJ, Chen FW, et al. Impact of PET/CT surveillance at 12 and 24 months for detecting head and neck cancer recurrence. *Cancer*. 2013 Apr 1; 119(7):1349-56.

3. **Thyroid cancer overdiagnosis and overtreatment**
   Modern high-resolution imaging has increased the discovery of incidental thyroid nodules, the vast majority of which are benign. Approximately 10-30% of fine needle aspiration biopsies return as indeterminate. Molecular assays are increasingly used to substratify equivocal nodules into surgery versus observation, putatively decreasing costs by avoiding unnecessary thyroidectomies. This body of work finds that the real-world performance of molecular assays varies by institution, depending on the region's prevalence of malignancy. Unintended collateral effects from the molecular assay are also identified that increased the incidence of indeterminate nodules, ultimately escalating cost without decreasing the rate of surgery. As a corollary, the overdiagnosis of subclinical thyroid cancers has led to misleading improvement in survival rates: by drawing from a clinically normal population, survival may appear to improve, even though the natural history of disease or treatment methods may not have changed. This work has helped improve our understanding of molecular assay applicability, while clarifying the effects of overimaging on survival rates.
   - **Ho AS**, Luu M, Zalt C, et al. Mortality risk of nonoperative papillary thyroid carcinoma: a corollary for active surveillance. *Thyroid*. 2019 Aug [Epub ahead of print].
   - **Ho AS**, Daskivich, TJ, Sacks WL, Zumsteg ZS. Parallels between low-risk prostate and thyroid cancer. *JAMA Oncology*. 2019 Apr 1; 5(4):556-564.
   - **Ho AS**, Davies L, Nixon IJ, et al. Increasing diagnosis of subclinical thyroid cancers leads to spurious improvements in survival rates. *Cancer*. 2015 Jun 1; 121(11):1793-9.
   - **Ho AS**, Sarti ES, Wang H, et al. Malignancy rate in thyroid nodules classified as atypia of undetermined significance. *Thyroid*. 2014 May; 24(5):832-9.

Complete list of published works in NCBI MyBibliography:
https://www.ncbi.nlm.nih.gov/myncbi/10s25hO5Opfkl/bibliography/public/

D. Research Support

Cedars-Sinai Precision Health Grant 1/1/2018 – 1/1/2019

Predictive markers for deleterious treatment breaks during head and neck cancer therapy
The major goals of this feasibility study are to identify predictive proteomic and lipidomic markers for treatment breaks during chemoradiation for head and neck cancer.
Role: PI

Donna and Jesse Garber Award for Cancer Research 1/1/2017 – 6/1/2018

Immunologic stratification of HPV-positive head and neck cancers correlated with clinical outcomes
The major goals of this project are to preliminarily identify via immunologic biomarker analysis HPV-positive head and neck cancer treatment successes and failures.
Role: PI

Adenoid Cystic Carcinoma Research Foundation Grant (13-0311) (PI – Chan) 3/31/2013 – 3/31/2015

Functionalizing the ACC genome via integrated genomic analyses
The major goals of this project are to prospectively perform a multidimensional analysis of adenoid cystic carcinoma to identify clinical molecular targets for treatment.
Role: Co-PI

AHNS/AAOHNSF Young Investigator Award (241051) 7/1/2012 – 7/1/2014

Mutational characterization of adenoid cystic carcinoma
The major goals of this project are to perform mutational analysis of adenoid cystic carcinoma through integrated exomic sequencing with a customized bioinformatics pipeline.
Role: PI

NIH T32 Ruth Kirschstein National Research Award (5T32CA009685-20) 7/1/2011 – 1/1/2013

Mutational landscape of salivary and thyroid malignancies
The major goals of this project are to perform high-throughput mutational analysis of rare, understudied salivary and endocrine cancers to identify actionable clinical targets.
Role: Grantee