BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Agarwalla, Pankaj Kumar

eRA COMMONS USER NAME (credential, e.g., agency login): PAGARWALLA23

POSITION TITLE: Assistant Professor of Neurosurgery, Rutgers New Jersey Medical School

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 College, Cambridge, MA	A.B.	06/2004	Classics – Greek and Latin
Oxford University, United Kingdom	M.St.	06/2005	Greek and Latin
Harvard Medical School, Boston, MA	M.D.	05/2010	Medicine
Massachusetts General Hospital, Boston, MA	N/A	06/2017	Neurosurgery Residency
Tampa General Hospital, Tampa, FL	N/A	07/2018	Complex Cranial Neurosurgery Fellowship

A. Personal Statement

I am a complex cranial, board-certified neurosurgeon with basic science, translational, and clinical interests in the treatment of brain tumors including brain metastases, one of the most common brain tumors. As an early-stage faculty member, I am developing my laboratory effort with the support of close collaborators focusing primarily on brain tumor research given its extreme morbidity and mortality.

For my NIH research proposals, I have significant research experience primarily in cancer immunotherapy, especially in the brain-privileged immune environment. In medical school during a Doris Duke research fellowship, I led pre-clinical work on a vaccine-based immunotherapy in a syngeneic mouse model of glioma and contributed to a phase I immunotherapy clinical trial in recurrent malignant glioma. In residency, I studied putative oncogenes in glioma and ovarian cancer using a large-scale in vivo screen. Here I developed a skillset for the genomic analysis of tumors and their follow-up functional characterization including cell culture, cloning, Western blot analyses, and cell proliferation assays. I continued my cancer biology interest with the support of NIH R25 funding during residency by performing genomic analyses on skull base tumors including meningioma, pituitary adenoma, and schwannoma. In this work, I specifically developed the skillsets for computational analyses and for “tumor banking” of surgical specimens for basic science research. My full publication list can be found here: https://www.ncbi.nlm.nih.gov/pubmed/?term=agarwalla%2C+pankaj.

For the purposes of my research, I am collaborating closely with Dr. Randall McKinnon, an expert in neural stem cells and myelin biology, who is also a member of the department of neurosurgery at Rutgers. Specifically, my experience in immunotherapy in the brain microenvironment, and also my robust neurosurgical oncology practice for collecting patient-derived tumor specimens will support and complement our proposed studies. I have protected research time for laboratory work, and I feel both highly motivated and competent to join the proposed studies.

B. Positions, Scientific Appointments, and Honors

Positions and Employment

2019 – Present Assistant Professor of Neurosurgery, Rutgers, New Jersey Medical School

Memberships

2016 – present Member, North American Skull Base Society
2010 – present Member, American Association of Neurological Surgeons
2009 – present Member, Congress of Neurological Surgery

Honors

2010 *cum laude*, Harvard Medical School
2009 Doris Duke Clinical Research Continuing Support Grant
2008 Doris Duke Clinical Research Fellowship
2007 American Brain Tumor Association (ABTA) Medical Student Summer Fellowship
2006 American Academy of Neurology (AAN) Summer Medical Student Research Scholarship
2006 Harvard Medical School's Louis W. Gilbert Fellowship for summer research
2004 Arthur D. Corey Full-Tuition Scholarship for the study of Classics at Oxford University
2004 *summa cum laude*, Harvard College
2004 Phi Beta Kappa, Harvard College
2004 David T. Clark Prize for Latin Oration at Harvard Commencement
2004 Smyth Prize for outstanding Greek thesis, Harvard College
2004 Joseph G. Parker Prize for breadth of interests outside pre-medicine, Harvard College
2004 Seymour E. & Ruth B. Harris Prize for combined achievement, Dunster House, Harvard
2004 Sally & Cresap Moore Prize for enthusiasm in learning, Dunster House, Harvard
2004 R. Coffey – J.P. Rollert Award for dedicated service to Harvard Undergraduate Council

C. Contributions to Science

1. GM-CSF-based vaccine immunotherapy for malignant glioma feasibility. During medical school with a Doris Duke Clinical Research fellowship, I worked with Dr. William Curry on two simultaneous projects focusing on the use of GM-CSF and autologous tumor vaccine in both a preclinical model with CTLA-4 blockade and a phase I clinical trial. My primary contribution on the basic science side was the mouse work, cell culture, and manuscript preparation, resulting in the first author paper noted below. In addition, I assisted with the workflow of the clinical trial of a similar approach in malignant glioma patients.

1. **Agarwalla** PK, Barnard ZR, Fecci PE, Dranoff G, Curry WT. "Sequential immunotherapy by vaccination with GM-CSF-expressing glioma cells and CTLA-4 blockade effectively treats established murine intracranial tumors."
   Journal of Immunotherapy. 2012 Jun. 35(5):385-9. PMID: 22576343.

2. Curry WT, Gorrepati R, Piesche M, Sasada T, **Agarwalla** PK, Jones PS, Gerstner ER, Golby AJ, Batchelor TT, Wen PY, Mihm MC, Dranoff G. "Vaccination with irradiated autologous tumor cells mixed with irradiated GM-K562 cells stimulates antitumor immunity and T-lymphocyte activation in patients with recurrent malignant glioma."
   Clinical Cancer Research. 2016. June 15. 22(12):2885-96. PMID: 26873960.

3. **Agarwalla** PK, Barnard ZR, Curry WT. "Virally mediated immunotherapy for brain tumors."
   Neurosurgery Clinics of North America. 2010. 21(1):167-79. PMID: 19944975.

4. Dunn GP, Rinne ML, Wykosky J, Genovese G, Quayle SN, Dunn IF, **Agarwalla** PK, Chheda MG, Campos B, Wang A, Brennan C, Ligon KL, Furnari F, Cavenee WK, Depinho RA, Chin L, Hahn WC. "Emerging insights into the molecular and cellular basis of glioblastoma."
   Genes and Development. 2012. 26(8):756-84. PMID: 22508724.

2. Functional genomics approaches for tumors. During residency, I developed my passion for functional genomic and cancer biology approach to brain tumors. In a short research rotation, I contributed to the functional proof of *GAB2* as an ovarian cancer oncogene. My contribution focused primarily on cell culture models, genetic cloning manipulation, and western blotting to understand oncogenic pathways activated by *GAB2* overexpression in ovarian cancer. I furthered this interest later in residency where I studied functional genomics of skull base tumors in a large collaborative group under the mentorship of Dr. Rameen Beroukhim. Here my contribution was primarily on skull base tumor genomics where we combined our work with another group to publish a large-scale genomic analysis of schwannoma in addition to other large-scale analyses.

1. Dunn GP, Cheung HW, **Agarwalla** PK, Thomas S, Zekster Y, Karst AM, Boehm JS, Weir BA, Berlin AM, Zou L, Getz G, Liu JF, Hirsch M, Vazquez F, Root DE, Beroukhim R, Drapkin R, Hahn WC. "In vivo multiplexed interrogation of amplified genes identifies GAB2 as an ovarian cancer oncogene. Proceedings of the National Academy of Sciences of the USA. 2014. Jan 21. 111(3):1102-7. PMID: 24385586.

2. Agnihotri S, Jalali S, Wilson MR, Danesh A, Li M, Klironomos G, Krieger JR, Mansouri A, Khan O, Mamatjan Y, Landon-Brace N, Tung T, Dowar M, Li T, Bruce JP, Burrell KE, Tonge PD, Alamsahebpour A, Krischek B, **Agarwalla** PK, Bi WL, Dunn IF, Beroukhim R, Fehlings MG, Bril V, Pagnotta SM, Iavarone A, Pugh TJ, Aldape KD, Zadeh G. "The genomic landscape of schwannoma." Nature Genetics. 2016. Nov. 48(11):1339-1348. PMID: 27723760.

3. Bi WL, Horowitz P, Greenwald NF, Abedalthagafi M, **Agarwalla** PK, Gibson WJ, Mei Y, Schumacher SE, Ben-David U, Chevalier A, Carter S, Tiao G, Brastianos PK, Ligon AH, Ducar M, MacConaill L, Laws ER, Santagata S, Beroukhim R, Dunn IF. "Landscape of genomic alterations in pituitary adenomas."
   Clinical Cancer Research. 2017. 23(7):1841-1857. PMID: 27707790.

4. Bi WL, Greenwald NF, Abedalthagafi M, Wala J, Gibson WJ, **Agarwalla** PK, Horowitz P, Schumacher SE, Esaulova E, Mei Y, Chevalier A, Ducar M, Thorner AR, van Hummelen P, Stemmer-Rachamimov A, Artyomov M, Al-Mefty O, Dunn GP, Santagata S, Dunn IF, Beroukhim R. "Genomic landscape of high-grade meningiomas."
   NPJ Genomic Medicine. 2017. Epub. PMID: 28713588.

Complete List of Published Work (PubMed):
https://www.ncbi.nlm.nih.gov/pubmed/?term=agarwalla%2C+pankaj