



Kevin K. Kumar, MD, PhD

Clinical Instructor, Neurosurgery

CLINICAL OFFICE (PRIMARY)

- **Neurosciences and Pediatric Surgery**

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Bio

BIO

Dr. Kevin K. Kumar was born in New York City and grew up in Long Island, New York. He attended college at Cornell University where he majored in Biological Sciences with a concentration in Neurobiology and Behavior. After graduation, Dr. Kumar joined the Medical Scientist Training Program (MSTP) at Vanderbilt University to earn his combined MD/PhD. He completed his PhD in Neuroscience in the laboratory of Dr. Aaron Bowman, where he studied the regulation of manganese in both Parkinson's and Huntington's disease using high throughput screening, induced pluripotent stem cells, and untargeted metabolomics. He then began his neurosurgery residency at Stanford. As a resident, Dr. Kumar completed an NIH-funded postdoctoral fellowship in the laboratory of Dr. Marius Wernig in the Stanford Institute for Stem Cell Biology and Regenerative Medicine. His work focused on developing a platform to replace microglia in the brain as a novel therapy for neurodevelopmental disorders.

From 2023-2024, Dr. Kumar will serve as Clinical Instructor in Pediatric Neurosurgery at Lucile Packard Children's Hospital at Stanford. In addition to his clinical duties, he will continue to advance cellular therapeutics for pediatric neurological diseases.

CLINICAL FOCUS

- Pediatric Neurosurgery, Functional Neurosurgery, Stem Cell Biology, Neuroregeneration
- Neurological Surgery

ACADEMIC APPOINTMENTS

- Clinical Instructor, Neurosurgery

PROFESSIONAL EDUCATION

- Residency: Stanford University Dept of Neurosurgery (2023) CA
- Medical Education: Vanderbilt University School of Medicine (2016) TN
- MD, Vanderbilt University , Medical Scientist Training Program (MSTP) (2016)
- PhD, Vanderbilt University , Neuroscience (2014)
- BS, Cornell University , Biological Sciences, Neurobiology and Behavior (2009)

Publications

PUBLICATIONS

- **Treatment of Trigeminal Neuralgia Secondary to Petroclival Meningioma Using Microsurgical Resection, Microvascular Decompression, and Stereotactic Radiosurgery: 2-Dimensional Operative Video.** *Operative neurosurgery (Hagerstown, Md.)*
Park, D. J., Kumar, K. K., Marianayagam, N. J., Yener, U., Rahimy, E., Hancock, S., Meola, A., Chang, S. D.
2024; 26 (1): 107-108
- **Vascular anomaly, lipoma, and polymicrogyria associated with schizencephaly: developmental and diagnostic insights. Illustrative case.** *Journal of neurosurgery. Case lessons*
Kumar, K. K., Toland, A., Fischbein, N., Morrell, M., Heit, J. J., Born, D. E., Steinberg, G. K.
2023; 5 (21)
- **Collateral status, hyperglycemia, and functional outcome after acute ischemic stroke.** *BMC neurology*
Arteaga, D. F., Ulep, R., Kumar, K. K., Southerland, A. M., Conaway, M. R., Faber, J., Wintermark, M., Joyner, D., Sharashidze, V., Hirsch, K., Giurgiutiu, D., Hannawi, Y., Aziz, et al
2022; 22 (1): 408
- **Balamuthia mandrillaris brain infection: a rare cause of a ring-enhancing central nervous system lesion. Illustrative case.** *Journal of neurosurgery. Case lessons*
Levinson, S., Kumar, K. K., Wang, H., Tayyar, R., Dunning, M., Toland, A., Budvytiene, I., Vogel, H., Chang, A., Banaei, N., Shuer, L.
2022; 3 (15)
- **Management of Severe Traumatic Brain Injury in Pediatric Patients.** *Frontiers in toxicology*
Lui, A., Kumar, K. K., Grant, G. A.
2022; 4: 910972
- **Treatment of a genetic brain disease by CNS-wide microglia replacement.** *Science translational medicine*
Shibuya, Y., Kumar, K. K., Mader, M. M., Yoo, Y., Ayala, L. A., Zhou, M., Mohr, M. A., Neumayer, G., Kumar, I., Yamamoto, R., Marcoux, P., Liou, B., Bennett, et al
2022; 14 (636): eabl9945
- **Commentary: Genome-Wide Association Study Identifies Genetic Risk Factors for Spastic Cerebral Palsy.** *Neurosurgery*
Kumar, K. K., Grant, G. A.
2021
- **Fluoroscopic versus CT-guided cortical bone trajectory pedicle screw fixation: Comparing trajectory related complications.** *Journal of clinical neuroscience : official journal of the Neurosurgical Society of Australasia*
Kumar, K. K., Parikh, B., Jabarkheel, R., Dirlikov, B., Singh, H.
2021
- **Spontaneous regression of a vein of Galen aneurysmal malformation in a pediatric patient: illustrative case.** *Journal of neurosurgery. Case lessons*
Kumar, K. K., Fornoff, L. E., Dodd, R. L., Marks, M. P., Hong, D. S.
2021; 1 (8): CASE20171
- **Commentary: Converting Pediatric Patients and Young Adults From a Shunt to a Third Ventriculostomy: A Multicenter Evaluation** *NEUROSURGERY*
Kumar, K. K., Grant, G.
2020; 87 (2): E105
- **Contemporaneous evaluation of patient experience, surgical strategy, and seizure outcomes in patients undergoing stereoelectroencephalography or subdural electrode monitoring.** *Epilepsia*
Kim, L. H., Parker, J. J., Ho, A. L., Feng, A. Y., Kumar, K. K., Chen, K. S., Ojukwu, D. I., Shuer, L. M., Grant, G. A., Graber, K. D., Halpern, C. H.
2020
- **Bilateral Deep Brain Stimulation is the Procedure to Beat for Advanced Parkinson Disease: A Meta-Analytic, Cost-Effective Threshold Analysis for Focused Ultrasound.** *Neurosurgery*
Mahajan, U. V., Ravikumar, V. K., Kumar, K. K., Ku, S. n., Ojukwu, D. I., Kilbane, C. n., Ghanouni, P. n., Rosenow, J. M., Stein, S. C., Halpern, C. H.
2020

- **Comparative effectiveness of neuroablation and deep brain stimulation for treatment-resistant obsessive-compulsive disorder: a meta-analytic study** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY*
Kumar, K. K., Appelboom, G., Lamsam, L., Caplan, A. L., Williams, N. R., Bhati, M. T., Stein, S. C., Halpern, C. H.
2019; 90 (4): 469–73
- **MR-Guided Focused Ultrasound Versus Radiofrequency Capsulotomy for Treatment-Refractory Obsessive-Compulsive Disorder: A Cost-Effectiveness Threshold Analysis** *FRONTIERS IN NEUROSCIENCE*
Kumar, K. K., Bhati, M. T., Ravikumar, V. K., Ghanouni, P., Stein, S. C., Halpern, C. H.
2019; 13
- **Robot-assisted versus manual navigated stereoelectroencephalography in adult medically-refractory epilepsy patients.** *Epilepsy research*
Kim, L. H., Feng, A. Y., Ho, A. L., Parker, J. J., Kumar, K. K., Chen, K. S., Grant, G. A., Henderson, J. M., Halpern, C. H.
2019; 159: 106253
- **Angiomyolipomas As A Cause of Abnormal Uterine Bleeding In A Patient with Tuberous Sclerosis** *Jacobs Journal of Gynecology and Obstetrics*
Harvey, L. F., Kumar, K. K., Desouki, M. M., Anderson, T. L.
2018; 5 (1): 035
- **Genomic Instability Associated with p53 Knockdown in the Generation of Huntington's Disease Human Induced Pluripotent Stem Cells** *PLOS ONE*
Tidball, A. M., Neely, M. D., Chamberlin, R., Aboud, A. A., Kumar, K. K., Han, B., Bryan, M. R., Aschner, M., Ess, K. C., Bowman, A. B.
2016; 11 (3)
- **Age-related sperm DNA methylation changes are transmitted to offspring and associated with abnormal behavior and dysregulated gene expression** *MOLECULAR PSYCHIATRY*
Milekic, M. H., Xin, Y., O'Donnell, A., Kumar, K. K., Bradley-Moore, M., Malaspina, D., Moore, H., Brunner, D., Ge, Y., Edwards, J., Paul, S., Haghighi, F. G., Gingrich, et al
2015; 20 (8): 995-1001
- **Deficits in neural responses to manganese exposure in Huntington's disease models**
Tidball, A. M., Kumar, K. K., Bryan, M. R., Bichell, T. J., Horning, K., Uhouse, M. A., Goodwin, C. R., Bornhorst, J., Schwerdtle, T., Neely, M. D., McClean, J. A., Aschner, M. A., Bowman, et al
PERGAMON-ELSEVIER SCIENCE LTD.2015: 105
- **A novel manganese-dependent ATM-p53 signaling pathway is selectively impaired in patient-based neuroprogenitor and murine striatal models of Huntington's disease** *HUMAN MOLECULAR GENETICS*
Tidball, A. M., Bryan, M. R., Uhouse, M. A., Kumar, K. K., Aboud, A. A., Feist, J. E., Ess, K. C., Neely, M. D., Aschner, M., Bowman, A. B.
2015; 24 (7): 1929-1944
- **PARK2 patient neuroprogenitors show increased mitochondrial sensitivity to copper** *NEUROBIOLOGY OF DISEASE*
Aboud, A. A., Tidball, A. M., Kumar, K. K., Neely, M. D., Han, B., Ess, K. C., Hong, C. C., Erikson, K. M., Hedera, P., Bowman, A. B.
2015; 73: 204-212
- **Untargeted metabolic profiling identifies interactions between Huntington's disease and neuronal manganese status** *METALLOMICS*
Kumar, K. K., Goodwin, C. R., Uhouse, M. A., Bornhorst, J., Schwerdtle, T., Aschner, M., McLean, J. A., Bowman, A. B.
2015; 7 (2): 363-370
- **Cellular manganese content is developmentally regulated in human dopaminergic neurons** *SCIENTIFIC REPORTS*
Kumar, K. K., Lowe, E. W., Aboud, A. A., Neely, M. D., Redha, R., Bauer, J. A., Odak, M., Weaver, C. D., Meiler, J., Aschner, M., Bowman, A. B.
2014; 4
- **Optimization of Fluorescence Assay of Cellular Manganese Status for High Throughput Screening** *JOURNAL OF BIOCHEMICAL AND MOLECULAR TOXICOLOGY*
Kumar, K. K., Aboud, A. A., Patel, D. K., Aschner, M., Bowman, A. B.
2013; 27 (1): 42-49
- **Down Syndrome** *COMPREHENSIVE DEVELOPMENTAL NEUROSCIENCE: NEURAL CIRCUIT DEVELOPMENT AND FUNCTION IN THE HEALTHY AND DISEASED BRAIN*
Bowman, A. B., Ess, K. C., Kumar, K. K., Summar, K. L., Rubenstein, J. L., Rakic, P.
2013: 547–71
- **Genetic risk for Parkinson's disease correlates with alterations in neuronal manganese sensitivity between two human subjects** *NEUROTOXICOLOGY*

Aboud, A. A., Tidball, A. M., Kumar, K. K., Neely, M. D., Ess, K. C., Erikson, K. M., Bowman, A. B.
2012; 33 (6): 1443-1449

- **The potential of induced pluripotent stem cells as a translational model for neurotoxicological risk** *NEUROTOXICOLOGY*

Kumar, K. K., Aboud, A. A., Bowman, A. B.
2012; 33 (3): 518-529

- **Bone loss in anorexia nervosa: leptin, serotonin, and the sympathetic nervous system** *MOLECULAR AND INTEGRATIVE PHYSIOLOGY OF THE MUSCULOSKELETAL SYSTEM*

Kumar, K. K., Tung, S., Iqbal, J.
2010; 1211: 51-65

- **Selective upregulation of the ADP-ribosyl cyclases CD38 and CD157 by TNF but not by RANK-L reveals differences in downstream signaling** *AMERICAN JOURNAL OF PHYSIOLOGY-RENAL PHYSIOLOGY*

Iqbal, J., Kumar, K., Sun, L., Zaidi, M.
2006; 291 (3): F557-F566