



Child Neurology

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Child Neurology Residency Program

Department of Neurology

The multidisciplinary Neurological Institute, one of 26 institutes at Cleveland Clinic, is internationally known for superior diagnosis and treatment of neurological disorders ranging from the common to the most complex. More than 300 specialists combine clinical expertise, academic achievement and innovative research to accelerate transfer of investigational therapies unavailable elsewhere, for the benefit of adult and pediatric patients. The institute is committed to improving outcomes while treating patients with compassion and respect.

WELCOME

Welcome!

Thank you for your interest in Cleveland Clinic's Child Neurology Residency Program. As you will see in the following pages, our program offers a comprehensive educational experience in which residents learn the latest developments in medical and neurological care, perform groundbreaking research and become leaders in pediatric neurology.

I want to highlight a few of our program's unique features:

- three-month EEG course
- travel allowance for each unique research abstract accepted at national meetings
- eight regular weekly neurology teaching conferences
- three-year Child Neurology or five-year Combined Pediatric/Child Neurology options

Our faculty comprises senior staff with nationally recognized expertise and experience, as well as young, energetic rising stars. We also enjoy a close relationship with the General Pediatrics and Adult Neurology programs to provide an optimal and diverse educational experience.

In addition to the internationally recognized medical reputation of Cleveland Clinic, our city has the cultural amenities of larger cities but offers a lower cost of living and fewer traffic jams. Our metropolitan area is home to MLB, NBA, and NFL professional sports teams; the Rock and Roll Hall of Fame and Museum; internationally acclaimed institutions such as the Cleveland Museum of Art, Cleveland Natural History Museum and Cleveland Orchestra. Our local chefs and restaurants have been featured on the Food Channel and in national publications.

We invite you to explore all the opportunities awaiting you here at the Cleveland Clinic; we look forward to meeting you soon!



Gary Hsich, MD

Director, Child Neurology Residency Program

Program Description

Facts and Figures

- Nationally ranked comprehensive hospital and subspecialty care in pediatric neurology, pediatrics and adult neurology
- 105-bed Children's Hospital
- 25-bed Pediatric Intensive Care Unit
- 17-bed Neonatal Intensive Care Unit
- Muscular Dystrophy Association and NIH-recognized Muscular Dystrophy Clinic
- Rehabilitation Hospital (available for electives)

The Department of Neurology and Section of Pediatric Neurology offer a three-year ACGME-accredited residency in Neurology with Special Competence in Child Neurology. Two pediatric neurology residents are accepted each year. Applications are processed through the National Resident Matching Program (NRMP).

Each resident begins with one year on the adult neurology service. During the second and third years, a pediatric neurology resident will spend a total of six months as a pediatric neurology inpatient chief resident and be responsible, along with the attending staff, for managing all primary inpatients and hospital consultations. He or she will also spend six months in the child neurology outpatient clinic, as well as rotating through specialty clinics. Training includes a comprehensive neurophysiology course with three months spent in EEG and two months spent in EMG. Other required rotations include a one-month child psychiatry block and two months of neuropathology. Significant time is dedicated to elective time that can include, among other options, neuro-ophthalmology, developmental pediatrics, neurobehavioral pediatrics, pediatric rehabilitation medicine, neuro-otolaryngology and sleep medicine.

Residents conduct a weekly CME-credited Pediatric Neurology Grand Rounds. There is also a daily Noon Conference lecture series and a monthly journal club.

Conferences/Didactics

Daily (M-F) Noon Conference Series on topics such as:

- Neuroscience and neuroanatomy
- Disease pathophysiology and management
- Live patient conference
- Professional development
- Research/stats/epidemiology
- Bioethics

Daily Neuroradiology Rounds (with a staff neuroradiologist)

Weekly conferences

- Neurology Grand Rounds
- Cerebrovascular/stroke conference
- Epilepsy Grand Rounds
- Epilepsy patient-management conference
- Live patient examination and teaching
- Pediatric Neurology Grand Rounds
- Pediatric Neurology neuroimaging conference

Other conferences

- Adult & Child Neurology journal club
- Brain cutting/pathology sessions
- Quarterly resident meeting with Dr. Tomislav Mihaljevic, Cleveland Clinic CEO
- Quarterly Neurological Institute Core Conference Series
- Neurology morbidity and mortality rounds

Research Opportunities

Professional Meetings

Residents are provided the opportunity to attend national meetings to present their research, with financial support from the department.

Neurological Institute Research Day (NIRD)

Annually, all trainees in the Neurological Institute are given the opportunity to present their research at NIRD; the most outstanding projects may be eligible for awards.

By the end of residency, most residents will have presented at least two abstracts at national meetings and published at least one manuscript in a peer-reviewed journal.



Recent Publications by Cleveland Clinic Pediatric Neurology Residents



DiSano MA, Cerejo R, Mays M. Acute paraparesis and sensory loss following intravenous corticosteroid administration in a case of longitudinally extensive transverse myelitis caused by spinal dural arteriovenous fistula: case report and review of literature. *Spinal Cord Ser Cases*. 2017 May 18;3:17025. doi: 10.1038/scsandc.2017.25. eCollection 2017.

McGinley M, **Rossman IT**. Bringing the HEET: The Argument for High-Efficacy Early Treatment for Pediatric-Onset Multiple Sclerosis. *Neurotherapeutics*. 2017 Sep 11. doi: 10.1007/s13311-017-0568-1. [Epub ahead of print] Review.

Marashly A, Lew S, Koop J. Successful surgical management of New Onset Refractory Status Epilepticus (NORSE) presenting with gelastic seizures in a 3 year old girl. *Epilepsy Behav Case Rep*. 2017 May 22;8:18-26. doi: 10.1016/j.ebcr.2017.05.002. eCollection 2017.

Rossman IT, Cohen JA. Should MRI be the primary endpoint of phase 3 trials in multiple sclerosis? *Expert Rev Clin Immunol*. 2016;12(5):489-91. doi: 10.1586/1744666X.2016.1145549. Epub 2016 Feb 19.

Murakami H, Wang ZI, **Marashly A**, Krishnan B, Prayson RA, Kakisaka Y, Mosher JC, Bulacio J, Gonzalez-Martinez JA, Bingaman WE, Najm IM, Burgess RC, Alexopoulos AV. Correlating magnetoencephalography to stereo-electroencephalography in patients undergoing epilepsy surgery. *Brain*. 2016 Aug 26. pii: aww215. [Epub ahead of print]

Sivaraman I, Friedman NR, Prayson RA. Muscle biopsy findings in a child with NALCN gene mutation. *J Clin Neurosci*. 2016 Dec;34:222-223. doi: 10.1016/j.jocn.2016.06.018. Epub 2016 Jul 26.

Abboud H, **Sivaraman I**, Ontaneda D, Tavee J. Camptocormia and Pisa syndrome as manifestations of acute myasthenia gravis exacerbation. *J Neurol Sci*. 2015 Dec 15;359(1-2):8-10. doi: 10.1016/j.jns.2015.10.020. Epub 2015 Oct 19.

Faculty: In the Spotlight

Neil Friedman, MBChB obtained his medical degree from the University of Cape Town, South Africa, in 1987. During his medical school training, he was actively involved in the anti-apartheid struggle. He subsequently spent three years working in London, including almost a year in pediatric neuromuscular disorders under Prof. Victor Dubowitz at the Royal Postgraduate Medical School, London, UK. His specialty training included a pediatrics residency at the University of Arizona (1995) and a neurology fellowship through Children's Hospital, Boston (1998).



Since 1998, Dr. Friedman has served as a staff physician in Pediatric Neurology at Cleveland Clinic. He was director of the Pediatric Neurology Training Fellowship Program from 2003 to 2008. He is currently involved in international CME activities. He received the Pediatric Chairman's Award for Education in 2006. He serves on the Institutional Brain Death Committee and is a member of the Pediatric Ethics Committee, Children's Hospital Pharmacy and Therapeutic Committee as well as the Children's Hospital Quality Control Committee.

Dr. Friedman's specialty interests include pediatric stroke, the neurological complications of congenital heart disease and cardiomyopathy, fetal neurology and pediatric neuromuscular disease. Dr. Friedman has been instrumental in establishing a protocol for the neuromuscular and neurometabolic evaluation of children with idiopathic cardiomyopathy. He is also a founding member of the Ohio Pediatric Stroke Registry and is a participating member of the International Pediatric Stroke Study (IPSS) multi-center registry.

Dr. Friedman has published numerous articles and book chapters; he recently co-edited a textbook on "Neurological Manifestations of Pediatric Infectious Diseases and Immunodeficiency Syndromes."

Sumit Parikh, MD is a neurometabolic and neurogenetics staff clinician at Cleveland Clinic.



His clinical interests include the genetic diagnosis and treatment of patients with mitochondrial cytopathies, inborn errors of metabolism, cognitive and developmental regression, autism and developmental delays. He is the director of the Cleveland Clinic Neurogenetics, Metabolic & Mitochondrial disease program and a co-director of the Cyclic Vomiting Syndrome Clinic.

Dr. Parikh completed his residency in pediatrics and a fellowship in child neurology at the Children's Hospital of Pittsburgh. He received additional training in genetics and metabolism at Cleveland Clinic and Centers for Inherited Diseases of Metabolism. He joined Cleveland Clinic in 2004. Since 2007, Dr. Parikh has been selected as one of "America's Best Doctors."

Dr. Parikh's research and publications focus on improving the diagnosis and management of mitochondrial disease, identifying genetic etiologies of epilepsy, autism, developmental delays and neurodegenerative diseases and improving patient and physician knowledge of metabolic and genetic diseases.

He serves as a medical adviser to the United Mitochondrial Disease Foundation and the Cyclic Vomiting Syndrome Association and is on the scientific advisory board of the International Foundation for CDKL5 Research. He is the secretary-treasurer of the Mitochondrial Medicine Society. He is on the scientific planning committee of the Child Neurology Society. He serves as the clinical co-chair of the Cleveland Clinic Autism Standards Committee and is a member of the Cleveland Clinic Child Advocacy Board. He is an editorial reviewer for the Journal of Child Neurology.

Benefits & Perks

Health Insurance The Cleveland Clinic will provide Cleveland Clinic Health Insurance Plan benefits, at a minimal cost, to you and your eligible dependents. Also available is a free on-campus gym, Curves or Weight Watchers membership.

Disability Insurance Paid for by the Cleveland Clinic for Residents/Fellows in Clinical Training Programs. Guaranteed issue, portability, HIV stance.

Maternity Care Full coverage is provided through your health plan, within the plan's guidelines.

Pharmaceuticals Prescription drug benefits are determined by the health plan chosen. All health plans have a deductible, co-pay or both for prescription medication.

Dental Care Plan The Cleveland Clinic offers a choice of three plans provided premium-free to residents/fellows and their eligible dependents after one year of training.

The EyeMed Vision Care Program is available at minimal cost to you and your eligible dependents. This plan is a materials-only plan which provides savings on prescription eyewear. (Note: routine eye exams are covered through your health plan).

Life Insurance A \$25,000 term group policy is provided.

Loans A \$1,200 interest-free loan is available to all house staff who receive a salary from the Cleveland Clinic.

Malpractice Insurance Paid by the Cleveland Clinic and includes tail coverage. Elective rotations outside of Cleveland Clinic are not covered by Cleveland Clinic

insurance. Upon completion of your training program, this coverage remains in effect for any litigation that may arise from incidents while you were in training.

Library Our 30,000-sq.-ft. library offers the following services: reference assistance, Medline searches, electronic resources and a Learning Resource Center.

iPhones All trainees at the Cleveland Clinic will receive a Clinic-approved iPhone, which includes secure messaging, email, and electronic health record access.

On-Call Meals

Moonlighting Senior residents are permitted (with permission from the program director) to moonlight on the Pediatric Neurology, Adult Neurology and Epilepsy services.

Time Away Residents are provided the opportunity to attend national meetings to present their research, with financial support from the department.

Vacation: Three weeks (15 paid working days).

Maternity: Six weeks paid leave for natural childbirth or adoption; eight weeks for Cesarean section.

Paternity: Two weeks paid leave (10 working days).

FMLA: The Family Medical Leave Act (FMLA) entitles all employees to as much as 12 weeks off, unpaid, after one year of employment. See Graduate Physicians Manual for further information. Check your specialty Board's requirements: You may need to make up part or all of your leave time prior to program completion.



Our Former Residents

Class of 2016

Indu Sivaraman: Clinical Associate Staff, Hillcrest and Fairview Hospitals, Cleveland Clinic

Class of 2017

Trishna Kantamneni: Epilepsy Fellowship, Cleveland Clinic

Lileth Mondok: Staff, Children's Hospital of Wisconsin

Kofi Quist: Private Practice, Indianapolis, IN

Class of 2018

Michael DiSano: Epilepsy Fellowship, Cleveland Clinic

Welcome to Cleveland

Located on the southern shore of Lake Erie, Cleveland and its many unique neighborhoods offer a wealth of cultural and recreational attractions.

Lakefront

Our harbor area features the Rock and Roll Hall of Fame and Museum, as well as the Great Lakes Science Center and its OMNIMAX Theater. Marinas, beaches and lakefront access abound in the Greater Cleveland area.

Sports

Cleveland is home to Browns football, Indians baseball and Cavaliers basketball, as well as Lake Erie Monsters hockey and Gladiators arena football. Many residents participate in intramural/recreational sports leagues.

Culture

Cleveland Clinic is located near University Circle, the city's cultural and educational epicenter, which is home to Case Western Reserve University, Severance Hall (the home of the world-renowned Cleveland Orchestra), the Cleveland Museum of Art, the Cleveland Museum of Natural History and the Cleveland Botanical Garden. Cleveland's downtown Playhouse Square theater district is one of the largest in the country. Restaurants and



entertainment venues can be found throughout the region, including the Horseshoe Casino. Cleveland has a very reputable food scene with many big name chefs!

Shopping

The Cleveland area offers many shopping districts, as well as malls such Beachwood Place, Crocker Park and Legacy Village, home to numerous high-end retailers.

Parks and Recreation

The Cleveland Metroparks – the city's “Emerald Necklace” – surround the city and perfect for golfing, hiking, horseback riding, cross-country skiing and ice skating. The Cleveland Metroparks Zoo now features a new “African Elephant Crossing.” Nearby, Cedar Point amusement park, Wildwater Kingdom Water Park and the Lake Erie shores and islands offers year-round fun and relaxation for the whole family.

Living in Cleveland

Whether you want to live downtown or in a historic neighborhood or in a suburb, Cleveland offers unique neighborhoods, many with convenient public transportation and affordable housing opportunities.

Learn more about living, working and playing in Cleveland at www.positivelycleveland.com





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