

**MS in Medical Physiology**  
**Focused Area of Study in Clinical Neuroscience Program**  
**Director: Dr. Kui Xu (kxx@case.edu); Co-Director: Joe LaManna**  
**(JCL4@case.edu)**

**Program Description:**

All students take the first-year core of 20 hours of Physiology courses. Close to the end of April each year, year 1 students can apply for the Focused Study in Clinical Neuroscience program, (submitting a one page document detailing why they would like to be considered for the program), and are evaluated by the MS in Medical Physiology Administration Committee the first week in May (after the scores on the final exam are available). The degree will officially remain “MS in Medical Physiology” but students can indicate, and the MS in Medical Physiology Administration Committee will acknowledge in all correspondence and letters of recommendation, that the student has completed a Focused Area of Study in Clinical Neuroscience.

There will be a limit of 12-15 students admitted into the Focused Area of Study in Clinical Neuroscience program. This number is determined by the number of slots available in the Clinical Observer courses; PHOL 620A, 620B, 620C, and 620D described below.

To be considered for the program, a student must:

1. Be in good academic standing; i.e. having a GPA greater than or equal to 3.0
2. Have passed the final comprehensive exam in Medical Physiology
3. Provide an excellent statement as to why they want to be part of the Focused Study in Clinical Neuroscience program
4. Receive the recommendation of their Academic Advisor
5. Complete an interview process

**Learning Objectives:**

Students are expected to spend 40 hours/week participating in all areas as a third-year medical student would do, except for patient contact. The student is expected to meet the following learning objectives:

1. Understand the principles of a complete neurological examination
2. Collaborate effectively with multi-disciplinary health team members
3. Enrich prior knowledge in Neuroscience through outside reading and literature searches

**Required Program Courses:**

Students must choose 3 out of the 4, but must take PHOL 620A-General Neurology – as 1 of those, plus either PHOL 497A (Fall) or PHOL 497B (Spring). An optional fourth rotation will add another 2 weeks to a student’s schedule and 2 more credit hours. **Please Note: Once you have chosen your rotation dates, they cannot be changed unless there is an emergency.** Keep this in mind when you are scheduling other activities like MCAT, vacations, etc. The following courses can be scheduled in the fall or spring semesters based on the rotation scheduling meeting that will occur in the summer.

### **Course Descriptions**

#### **1. PHOL620A: Clinical Observer, Neurological Service (2 credit hours – Graded)**

This course is a 2-week intensive experience offered summer, fall, and spring semesters on a schedule set by the Department of Neurology at University Hospitals Case Medical Center. Students are expected to be present and observe at all of the times set forth by the house staff and attending, generally a 40-hour week minimum. The Objective of the course is to provide the students with the experience of observing patient care provided by 3rd year medical students on a clinical rotation under direct supervision by house staff and attending on an active acute Neurology Service. The PGY-2 Neurology Resident and PGY-3 Chief Resident will always be available for immediate supervision. Students round as Clinical Observers with the CWRU medical students according to their daily schedule. They will learn the basics of neurological history-taking, neurological examination, neurodiagnostic studies, and neurological therapeutics. Didactic sessions covering a wide range of neurologic and neurosurgical topics are covered by faculty members from both departments. The lectures cover the gamut of neurological and neurosurgical disease processes and treatments. Neurosurgery lectures include such topics as cerebrovascular disease, brain tumors, hydrocephalus, spinal disorders, and head trauma as well as doctor-patient communication. Unlike the medical students on the rotation, a Clinical Observer will only observe procedures and will not actively take part in any health care – he/she will act strictly as an observer but will act as a physiological consultant to the team responsible for providing basic science input to the clinical cases.

#### **2. PHOL620B: Clinical Observer, Stroke Service (2 credit hours – Graded)**

This course is a 2-week intensive experience offered summer, fall, and spring semesters on a schedule set by the Department of Neurology at University Hospitals Case Medical Center. Students are expected to be present and observe at all of the times set forth by the house staff and attending, generally a 40-hour week minimum. The Objective of the course is to provide the students with the experience of observing patient care provided by 3rd year medical students on a clinical rotation under direct supervision by house staff and attending on an active acute Neurology Service. The PGY-2 Neurology Resident and PGY-3 Chief Resident will always be available for immediate supervision. Students round as Clinical Observers with the CWRU medical students according to their daily schedule. They will learn the basics of neurological history-taking, neurological examination, neurodiagnostic studies, and neurological therapeutics. Didactic sessions covering a wide range of neurologic and neurosurgical topics are covered by faculty members from both departments. The lectures cover the gamut of neurological and neurosurgical disease processes and treatments. Neurosurgery lectures include such topics as cerebrovascular disease, brain tumors, hydrocephalus, spinal disorders, and head trauma as well as doctor-patient communication. Unlike the medical students on the rotation, a Clinical Observer will only observe procedures and will not actively take part in any health care – he/she will act strictly as an observer but will act as a physiological consultant to the team responsible for providing basic science input to the clinical cases.

#### **3. PHOL620 C: Clinical Observer, Epilepsy Service (2 credit hours – Graded)**

This course is a 2-week intensive experience offered summer, fall, and spring semesters on a schedule set by the Department of Neurology at University Hospitals Case Medical Center. Students are expected to be present and observe at all of the times set forth by the house staff and

attending, generally a 40-hour week minimum. The Objective of the course is to provide the students with the experience of observing patient care provided by 3rd year medical students on a clinical rotation under direct supervision by house staff and attending on an active acute Neurology Service. The PGY-2 Neurology Resident and PGY-3 Chief Resident will always be available for immediate supervision. Students round as Clinical Observers with the CWRU medical students according to their daily schedule. They will learn the basics of neurological history-taking, neurological examination, neurodiagnostic studies, and neurological therapeutics. Didactic sessions covering a wide range of neurologic and neurosurgical topics are covered by faculty members from both departments. The lectures cover the gamut of neurological and neurosurgical disease processes and treatments. Neurosurgery lectures include such topics as cerebrovascular disease, brain tumors, hydrocephalus, spinal disorders, and head trauma as well as doctor-patient communication. Unlike the medical students on the rotation, a Clinical Observer will only observe procedures and will not actively take part in any health care – he/she will act strictly as an observer but will act as a physiological consultant to the team responsible for providing basic science input to the clinical cases.

**4. PHOL620D: Clinical Observer, Neuromuscular Service (2 credit hours – Graded)**

This course is a 2-week intensive experience offered summer, fall, and spring semesters on a schedule set by the Department of Neurology at University Hospitals Case Medical Center. Students are expected to be present and observe at all of the times set forth by the house staff and attending, generally a 40-hour week minimum. The Objective of the course is to provide the students with the experience of observing patient care provided by 3rd year medical students on a clinical rotation under direct supervision by house staff and attending on an active acute Neurology Service. The PGY-2 Neurology Resident and PGY-3 Chief Resident will always be available for immediate supervision. Students round as Clinical Observers with the CWRU medical students according to their daily schedule. They will learn the basics of neurological history-taking, neurological examination, neurodiagnostic studies, and neurological therapeutics. Didactic sessions covering a wide range of neurologic and neurosurgical topics are covered by faculty members from both departments. The lectures cover the gamut of neurological and neurosurgical disease processes and treatments. Neurosurgery lectures include such topics as cerebrovascular disease, brain tumors, hydrocephalus, spinal disorders, and head trauma as well as doctor-patient communication. Unlike the medical students on the rotation, a Clinical Observer will only observe procedures and will not actively take part in any health care – he/she will act strictly as an observer but will act as a physiological consultant to the team responsible for providing basic science input to the clinical cases.

**5. PHOL 497A (Fall) & PHOL 497B (Spring): Neurology Grand Rounds**

(1 credit hour each) (Pass/Fail)

Students in the Clinical Neuroscience Focused Study must take and pass one semester of Neurology Grand Rounds. They may take a second Grand Rounds course as an elective (see below). This course is a weekly seminar series offered fall and spring semesters by the Department of Neurology at University Hospitals Case Medical Center. To earn a passing grade in this course, students must attend at least 10 of the grand rounds offered by the Department of Neurology during the semester and write corresponding papers as outlined in the course requirements section.

## Course Requirements:

### PHOL620 A, B, C, D Clinical Observer

- Attendance- Students are expected to be present and observe at all of the times set forth by the house staff and attending, generally a 40-hour week minimum, M-F.
- Daily Journal
  - 15% of final grade
  - Required daily journal of experiences, which should document new concepts or demonstrate a more in-depth understanding of a clinical test, technology, drugs, treatments or other areas that are encountered during observation. These journals will be reviewed and evaluated by the course director and can be physical notebooks or typed daily journals. Notebooks should be turned into Dr. LaManna's mailbox in the MSMP office and typed journals can be uploaded into rotation documents.
- Short 5-10 min Rotation Presentations
  - Students should complete a required presentation during each rotation to the floor team as directed by the attending or chief resident. This presentation topic will either be assigned by the attending or chief resident or could be a suggested topic by the student. Students should prepare a short PowerPoint presentation on the topic for the neurology team highlighting the physiological importance of that topic.
- Evaluations
  - 50% of final grade
  - Required one (1) evaluation **per rotation** is required to be filled out by the attending or senior resident on that service. The evaluation is based on the four competency areas of Knowledge, Communication, Professionalism and Research. An evaluation of "Honors" or "Commendable" will constitute an "A"; "Satisfactory" will equate to "B". This rotation assessment form is similar to that used for the rotating medical students modified to be relevant for graduate students. More than 1 evaluation per rotation can be submitted, but only 1 is required. Evaluations must be sealed and signed by the letter writer and then turned in by the end of the semester to Dr. Xu. Evaluations can be also emailed to Dr. Xu ([kxx@case.edu](mailto:kxx@case.edu)).
- Rotation Paper
  - 20% of final grade
  - Required single-space 5-page research paper for each rotation, submitted by the end of the semester. Students should write a total of 3-4 papers based on how many rotations they have chosen to complete. Each paper should highlight a specific condition that the student saw during each rotation. Examples of topics: Movement disorders/Parkinson's disease, Neuropathy, Stroke, Chronic Pain, Dizziness/Syncope, Multiple Sclerosis, Neuropsychopharmacology, Rehabilitation of Patient with Neurologic Disorder, Dementia, Headache, Nervous System Tumors, or Seizure/Epilepsy.
    - Format of the paper must address the clinical background of the disease, physiological principles involved in the etiology, symptomatology, diagnosis, treatment and prognosis, and physiological insights gained from

the study of this disease during this rotation. These papers will be graded by the course instructor based on depth of content, research and references cited, understanding of the neurological disease while acquiring research knowledge and demonstrating key principles they encounter as well as quality explanation of the physiological insight gained. References page is required.

- Papers must be uploaded to the rotations folder of Clinical Neuroscience AOC Google Drive before the end of the semester
- End of Semester Presentation
  - 15% final grade
  - Required presentation at the end of the semester to the entire group of Focused Study in Clinical Neuroscience students and the AOC faculty. Students should choose one of their rotation papers and then make a PowerPoint presentation on the paper to present to the group. Presentations are expected to be around 20 minutes. Fill out your presentation topic and submit your presentation to the Clinical Neuroscience AOC Google Drive presentation folder.
  - Date of Presentations Fall 2020- December
  - Date of Presentations Spring 2021- May

#### **PHOL497 A, B Neurology Grand Rounds**

- Attendance and Check-In
  - Coordinator for Neurology Grand Rounds- Kim Puskus, Coordinator, 216- 844-3194; [kim.puskus@uhhospitals.org](mailto:kim.puskus@uhhospitals.org); Coordinator for Epilepsy Grand Rounds- Tamika Common; [Tamika.Cammon@uhhospitals.org](mailto:Tamika.Cammon@uhhospitals.org);
  - Neurology Grand Rounds: Every Friday 8am - 9am, Kulas Auditorium in Lakeside Building (UH Hospital); Epilepsy Grand Rounds: Every Monday 8am – 9am. Zoom link will be provided if applicable. Grand Rounds schedule/Information will be posted on Canvas.
  - Must attend a minimum of 10 Grand Rounds (Neurology or Epilepsy), over 2 semesters if needed. Students must create an account and profile to sign in each week to claim credit for attendance with CME (Case Western Continuing Medical Education). Codes for CME credit will be written in the auditorium or emailed out by Sue Foss later in the day. By the end of the semester students should download their CME transcript and submit it to the Clinical Neuroscience AOC Google Drive grand rounds folder.
  - Registering for CME-
    - Go to <https://cwru.cloud-cme.com>
    - If you previously had an account in the old management system, click “Sign In” on the menu bar and reset your password. **PLEASE NOTE THAT IF YOU HAVE ATTENDED SESSIONS IN THE PAST AND SIGNED IN TO THE OLD PORTAL TO VIEW YOUR TRANSCRIPTS, YOU ALREADY HAVE AN ACTIVE ACCOUNT.** If you have never had an account and this is your first time ever logging in, click “Sign Up Now” and follow the instructions.
    - See “CME Transcript” under AOC documents for more information

- Grand Rounds Papers
  - Students must choose 2 grand rounds topics (neurology) to write 2-page single-spaced reports on and submit to Clinical Neuroscience AOC Google Drive Grand Rounds folder.
    - Format: Please title the paper with the following identification info - Student Name/Semester, Date & Title of GR Presentation/Speaker. Papers should cover: 3 major conclusions obtained from the presentation, the principles of physiology related to the topic, and any physiology insights gleaned from the presentation.
  - IF a student chooses to attend an Epilepsy or Neuromuscular Grand Rounds, they must email Dr. Xu ([kxx@case.edu](mailto:kxx@case.edu)) and ask for permission beforehand. Then they must submit an additional paper on that topic from that epilepsy/neuromuscular grand round in addition to the other 2 neurology grand round papers. So for example if you attend 10 neurology grand rounds you will write 2 papers. If you attend 9 neurology grand rounds and 1 epilepsy grand round you will write 3 papers.

### **Required Documents for UH Hospital:**

The following documents are required to be submitted/mailed to Tamika Common [Tamika.Cammon@uhhospitals.org](mailto:Tamika.Cammon@uhhospitals.org) before the start of rotations

- TB test (less than 1 year old)
- Seasonal Flu Shot
- COVID-19 vaccination (at least 2 doses)
- Valid ID i.e. Driver's License (front and back)
- Health Insurance Card (front and back)
- Compliance Training Certification from UH Hospital-  
<http://content.learnshare.com/courses/81/736908/multiscreen.html>

### **AOC Schedule Example:**

Rotation schedules will be determined at an AOC meeting in the summer with all AOC students and AOC Clinical Neuroscience faculty and staff who are in charge from CWRU and UH -- Drs. Wei Xiong (UH), Joseph C. LaManna and Kui Xu plus Ms. Tamika Common (UH). Students who cannot make the meeting in person will have the option to Zoom into the meeting to pick their schedule.

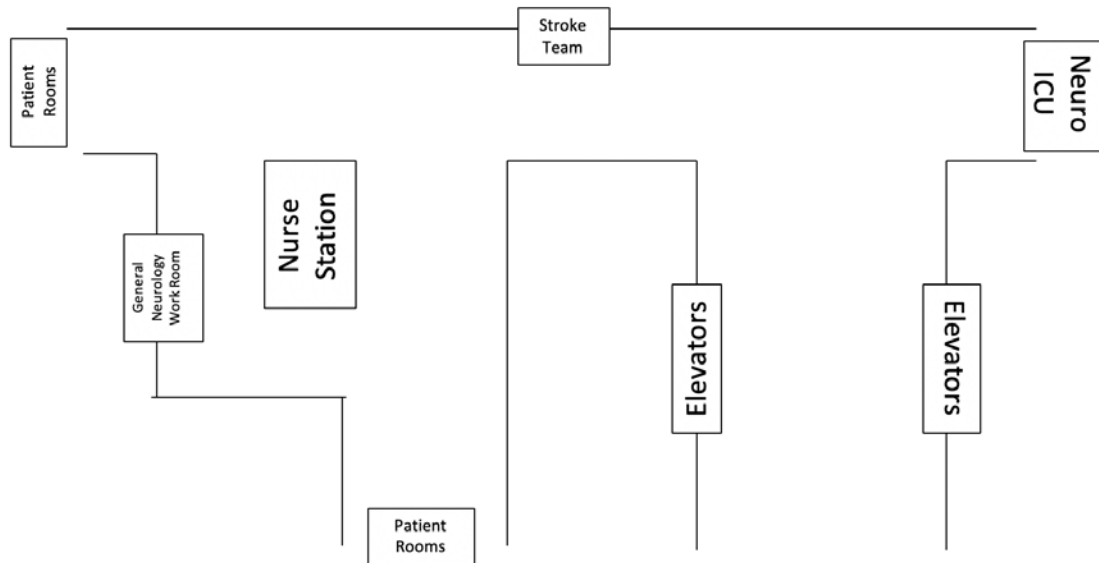
2019	A (General)	B (Stroke)	C (Epilepsy)	D (Neuromuscular)
8/12-8/23/2019	1	2		
8/26-9/6	2	3		1
9/9-9/20	3	1	4	2
9/23-10/4	4	5	1	3
10/7-10/18	5	6	3	4
10/21-11/1	6	4	7	5
11/4-11/15	7	8	5	6
11/18-11/29	8	9	6	
12/2-12/13	9	7		8

\*\*Each number represents a student and shows how they rotate through 3-4 specialties

**Neurology Specialty Locations: All located in UH Hospital Main Campus**

- General Neurology- 4<sup>th</sup> Floor Lerner Tower
- Stroke Team- 4<sup>th</sup> Floor Lerner Tower
- Neuromuscular- 5<sup>th</sup> Floor Bolwell Building
- Epilepsy Team- Varies, contact fellow/resident on service

**Layout of Work Room Locations on 4<sup>th</sup> Floor**



**Dress Code:**

- Business casual
- Short white coat- can find a lab coat on Amazon
- Case Western ID in a badge holder to wear while on rotations
- Suggested- bring laptop, pens, notebook

**Helpful Learning Resources:**

NIH Stroke Scale- [https://www.stroke.nih.gov/documents/NIH\\_Stroke\\_Scale\\_508C.pdf](https://www.stroke.nih.gov/documents/NIH_Stroke_Scale_508C.pdf)

Neurological Exam- <https://meded.ucsd.edu/clinicalmed/neuro2.htm>

Researching Diseases or Conditions- [www.uptodate.com](http://www.uptodate.com)

General Overview Neurology Clerkship-

<http://casemed.case.edu/clerkships/neurology/default.html>

UH Neurology Residents: <http://casemed.case.edu/dept/neurology/General.html>

**POLICY ON EXCUSED ABSENCES:**

Attendance is required, but excused absences due to medical school interviews, exams, or for medical reasons may be permitted. Planned absences must be reported beforehand to Neurology Residency liaison. The contact information is provided to the students before their rotations start.