



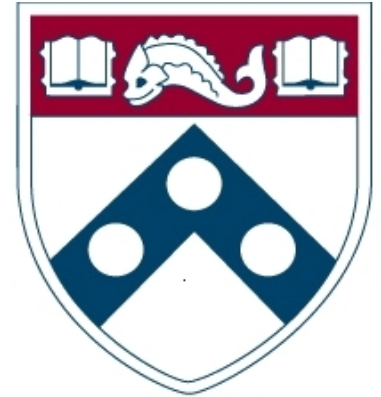
HHMI Med into Grad Scholars Program:

Clinical Experiences

University of Pennsylvania
School of Medicine

Program Directors:

Mitch Lewis, DPhil and Carolyn Cambor, MD





1. Description of Clinical Experience

5 Goals:

Individualized

Flexible

Targeted

Efficient

Meaningful



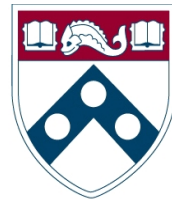
1. Description of Clinical Experience

Program Implementation

- Meet with each student
- Determine area of interest
- Discuss possible clinical correlates
- Patients, radiology, clinical lab etc
- Contact MDs, MD-PhDs, PhDs
- Meet with clinical preceptor & student
- Determine a plan
- Arrange observership status for student



HHMI Med into Grad Scholars Program University of Pennsylvania School of Medicine



6 Completed Clerkships

Grad Group	Research Interest	Clinical Experience
Neuroscience	Developmental Neurobiology	Pediatric Neurologist; ½ day/wk for 1 semester (14 wks)
Neuroscience	Neurodegenerative	Penn Memory Center; 60 hrs
Neuroscience	Neurodegenerative	Alzheimer Diagnostic Clinic & Genetic Counseling; ½ day / week x 8 weeks
Neuroscience	Neurobiology of Olfaction	Penn Taste & Smell Center; 12 full days
Microbiology	Herpes viruses	Infectious Disease, HIV clinic; ½ day/wk x 1 semester (14 wks)
Gene Therapy & Vaccines	Immunology & Vaccines	8 week fulltime externship @ drug company (outside funding ⁴)



1. Student Participation: Neurodegenerative Diseases

Observe

- Patients with a variety of neurodegenerative diseases
- Patient interviews with family members
- Patient examinations
- Memory testing
- Lumbar puncture
- Deep brain stimulation
- Genetic counseling
- Physician discussions with patients and families

Discuss with Preceptor:

- Diagnostic difficulties in neurodegenerative diseases
- Testing and test results
- Radiology results
- Treatment options; drugs; drug metabolism; efficacy



1. Student Participation: Herpes viruses

Observe:

Patients with HIV & other viral infections

(HBV, HCV, HPV and Herpes Simplex)

Physician interaction with patients to increase compliance with drug regimen

See effect of infection and treatment from patient's point of view

Discuss with Preceptor:

Topics that arise during clinic visits

Small projects and research assigned to student



1. Additional Clinical Experiences

Pathology:

Autopsy

Brain dissection

Clinical laboratories

Molecular Pathology

Radiology

Conferences

Will try to arrange any type of experience



2. Student Participation: Documentation

Maintain journal during clerkship

Specifics of the rotation

Thoughts about the experiences

Reflections on applicability to their research

Summary paragraph at the end

Suggestions for improvements

Comments



2. Student Participation: Evaluation

Faculty asked for feedback about student
Attendance
Interest
Participation

Students receive a letter grade

Faculty & students asked for feedback about program
& suggestions for improvement



3. Clinical Experience: Length & Integration into Curriculum

Variable lengths: ~7 full days

14 half-days over 14 weeks

9 full days over 3 months

60 hours over a semester

Integration

Most take it between 1st and 2nd year
maximal impact on research

“Institutionalized”

considered a lab rotation, course #, grade



4. Challenge : Finding Clinical Mentors

Solutions

Use MD contacts & connections

Program director, or consult with MD

Curriculum Office

If 1st choice not available, ask for recommendation

Consider Clinical fellows

Investigate all of your resources

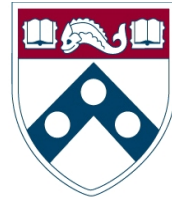
(eg Penn's Center for Taste and Smell)



4. Challenge: Getting Clinical Mentors to Participate

Solutions

The right mentors will want to participate
Clinical Fellows are an excellent resource
Keep searching!



4. Challenge: Permission to be in Clinical Areas

Can only 'observe'

Requires many items

Request for CV, observer status, sponsor, description of activity

Health insurance evidence, documentation of immunizations

TB screening

Patient confidentiality form, HIPAA training certification

Photo ID badge

Solutions:

Be prepared!

May be quite time consuming

Different hospitals have different procedures

Find out the procedure for your hospital

Start the process early (3-4 months in advance)



4. Other Challenges & Solutions

Student preparation for clerkship:

Limited background knowledge

Solution:

Additional meetings w/ mentor prior to clerkship

Assigned reading prior to clerkship

Students wish to rotate with >1 MD

Solution:

Investigate the feasibility

May be possible in certain areas



Plans for 2009

Provide interactions with preceptors prior to the clerkship

Add reading & preparation for clerkship

Improve faculty feedback & student evaluation system

Enhance peer mentoring about the clerkships



Student Feedback

Extremely valuable experience

First opportunity to gain insight into patient presentation, clinical diagnosis and treatment

Seeing disease in a patient context “ingrained” details not available in other ways

Increased motivation for research



Student Comments

“[I] heard from a patient the impact on human experience caused by a genetic mutation in a given protein”

“...appreciate the complexity of diagnosing neurodegenerative diseases, and to see first hand their major symptoms. ..”

“...what I learned from these patients will be retained much long[er] than the information I have been taught in classes.”



Student Comments

It gave me great insight into how research transitions into a clinical setting...

I had the opportunity to apply research information to critical assessments of patient treatment options...

increase[d] my enthusiasm for benchtop research as a means of developing new treatmentsfor infectious diseases