MAYO CLINIC

AAPM / CAMPEP Residency Training Program Workshop

Appendices

Robert A. Pooley, Ph.D.

Mayo Clinic Florida

August 29, 2009

Common Appendices

- Letters of invitation and institutional commitment
- Documentation of institutional accreditation
- Clinical rotation information
  - Sample rotation schedules
  - Sample training plans
  - Competencies
- Program graduates
- Faculty biographical sketches

Letter of Invitation

University of Minnesota
Medical Physics Residency Training Program

Appendix 4: Letters

UNIVERSITY OF MINNESOTA

Twin Cities Campus

Department Therapeutic Radiology-Radiation Oncology
Medical School

Box 494
420 Delaware Street S.E.
Minneapolis, MN 55455-0110
612-626-6146
Fax: 612-624-5445

1/30/2005

Eric E. Klein, M.S.
Chair, Residency Education Program Review Committee
American Association of Physicists in Medicine
Radiation Oncology Department
Mallinckrodt Inst of Radiology
4921 Parkview Place
Campus Box 8224
St. Louis, MO 63110

Eric E. Klein, M.S.
Chair, Residency Education Program Review Committee
American Association of Physicists in Medicine
Radiation Oncology Department
Mallinckrodt Inst of Radiology
4921 Parkview Place
Campus Box 8224
St. Louis, MO 63110

Dear Mr. Klein,

We formally invite the Commission on Accreditation of Medical Physics Education Programs (CAMPEP) to visit and review the University of Minnesota Radiation Oncology Physics Residency Program. Attached you will find the self-study prepared by Dr. Bruce J. Gerbi, the Program Director.

We applaud your efforts to set standards for quality training in medical physics programs and are willing to assist you in whatever you need to review the University of Minnesota Physics Residency Program. Please let us know if we can help in any way.

Sincerely,

Kathryn E Dusenbery

Kathryn Dusenbery, MD
Department Head

cc: Bruce J. Gerbi, Ph.D.

Letter of Institutional Commitment

SCOTT & WHITE

Attachment 2A: Letter of Support from Department

February 1, 2008

Bruce Gerbi, Ph.D.
Chair, CAMPEP Residency Education Program
Therapeutic Rad. - Rad. Oncology
University of Minnesota
Mayo Mail Code 494
420 Delaware St SE
Minneapolis , MN 55455

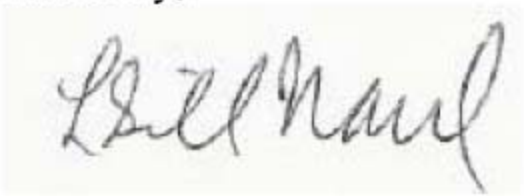
Dear Dr. Gerbi,

The Administrative and Educational Leadership in the Radiology Department and the Division of Radiation Oncology at Scott & White Clinic supports this application for accreditation of our Radiation Oncology Physics Residency. Since its inception we have encouraged its existence and excellence.

The Administrative and Educational Leadership in the Radiology Department and the Division of Radiation Oncology at Scott & White Clinic supports this application for accreditation of our Radiation Oncology Physics Residency. Since its inception we have encouraged its existence and excellence.

We feel this program compliments our education mission and we are highly desirous that it achieve the designation "Accredited by CAMPEP, Inc" as an assurance that the program has achieved the level of excellence we strive for.

Sincerely,



Gil Naul, M.D.
Chair, Department of Radiology

Alan Cheung, M.D.
Director, Radiation Oncology Division

Documentation of Institutional Accreditation

Fairview-University Medical Center

Minneapolis, MN

has been Accredited by the

Joint Commission

on Accreditation of Healthcare Organizations

Which has surveyed this organization and
found it to meet the requirements for accreditation.

2003-2006

Bernard L. Hengesbaugh
Chairman of the Board of Commissioners

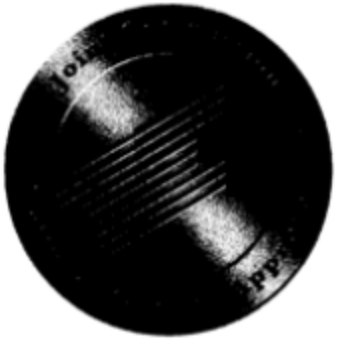
Dennis S. O'Leary, M.D.
President

The Joint Commission on Accreditation of Healthcare Organizations is an independent, not-for-profit, national body that oversees the safety and quality of health care and other services provided in accredited organizations. Information about accredited organizations may be provided directly to the Joint Commission at 1-800-994-6610. Information regarding accreditation and the accreditation performance of individual organizations can be obtained through the Joint Commission's web site at www.jcaho.org.

Rochester Methodist Hospital

Rochester, MN

has been Accredited by the



Joint Commission

on Accreditation of Healthcare Organizations

Which has surveyed this organization and
found it to meet the requirements for accreditation.

2005-2008

Fred L. Brown
Chairman of the Board of Commissioners

Dennis S. O'Leary, M.D.
President

The Joint Commission on Accreditation of Healthcare Organizations is an independent, not-for-profit, national body that oversees the safety and quality of health care and other services provided in accredited organizations. Information about accredited organizations may be provided directly to the Joint Commission at 1-800-994-6610. Information regarding accreditation and the accreditation performance of individual organizations can be obtained through the Joint Commission's web site at www.jcaho.org.

Clinical Rotation Summaries

University of Minnesota
Medical Physics Residency Training Program

Clinical Rotation Schedule and Objectives

Rotation 1 **Chief Mentor: B Gerbi**

Orientation
Machine QA: monthly mechanical checks, calibration
Brachytherapy: GYN loading/unloading, HDR QA
Rotations: Nursing, Linacs, Simulator, Radiation Protection
MU calculation problem set
Chart checking
Special procedures: TBI

1. The resident shall:
   a. Meet with the program director to discuss program objectives
   b. Meet to discuss Rotation 1 Objectives(Attachment R.1.A)
   c. Attend the department orientation course

1. Cover the Quality Management Program (QMP)
2. Cover Monitor Unit Calculation (Attachment R.1.B)
3. Cover Brachytherapy LDR Loading/unloading and control of radioactive material
4. Cover other items on Attachment R.1.A

2. Attend hospital orientation

First Rotation Objectives (Attachment R.1.A)

Activity	Covered	Completed
Monitor Unit Calculations – complete the standard handout for monitor unit calculations, "Routine calculations in the U. of MN Department of Therapeutic Radiology"		
Take and pass the monitor unit Level I (doer) test		
Read and understand the Quality Management Program (QMP)		
Participate in, and take over the loading, unloading, logging, and control of sources in the Low Dose Rate Brachytherapy Program; Training Case 1_____, 2_____, 3_____		
Become proficient in performing the morning HDR QA		
Be able to perform TBI calculations and compensator design by hand and using in-house program		
Be able to describe the commissioning of a TBI treatment program		

Attachment 10: Typical Radiation Oncology Physics Resident Rotation Schedule

Rotation Calendar for NNNNNNNNN

Task Color Legend: Blue'= Complete Red= In Progress Black= Scheduled

Processes		1. Detectors and Dosimeters	200X Jul-Sep Q1	200X Oct-Dec Q2	200Y Jan-Mar Q3	200Y Apr-Jun Q4	200Y Jul-Sep Q5	200Y Oct-Dec Q6
10	1	Calibrate an ionization chamber and electrometer through an ADCL				1,2	3	
	2	Perform and report constancy checks between standard and field instruments	1,2,3					
	3	Disassemble and assemble an ionizaton chamber	1,2,3					
	4	Compute parameters for TG-51 calibration procedures				1,2	3	
	5	Perform and report TLD exposures for RPC checks		1,2,3				
	6	Measure and report in vivo dose with MOSFETs	1			2	3	
	7	Measure and report relative dose with diodes			1,2		3	
	8	Characterize film a for quantitative measurements						
	9	Measure and report GM measurements before an HDR treatment				1,2,3		
	10	Measure and report x-ray and neutron dose levels around a linear accelerator		1,2			3	

		2. Radiation Safety	Q1	Q2	Q3	Q4	Q5	Q6
9	1	Take Scott & White Radiation Regulation Exam	1,2,3					
	2	Radioactive Materials On-line training			1,2,3			
	3	Establish and maintain a mock personnel monitoring process						1,2,3
	4	Establish and maintain mock radiation safety training for staff					1,2,3	
	5	Perform linac vault survey		1,2,3				
	6	Mock survey instrument calibration report				1		
	7	Report primary calibration and QA checks of a GM system						1,2,3
	8	Write mock incident report				1		2,3
	9	Write mock Radioactive Materials License				1,2,3		

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(from Boyer self-study)

Rotation 1; 6 Months – Task List for Radiation Oncology Physics Residents

Orientation, Rotation in Patient Simulation, Patient Virtual Simulation, Simulator and CT Quality Assurance, Device Fabrication, 3-D Treatment Planning and In-Vivo Dosimetry Measurements

Mentors: Betty Achino, CMD; Albert Zacarias, Ph.D.

Overview:

Clinical training will be under the direction of the Assistant Director of the Radiation Oncology Physics Residency Program. The training and supervision of clinical physics activities will be by the faculty and professional staff of the Physics Section of the Radiation Oncology Department. The training in dosimetry procedures will be by the Dosimetry Section of the Department of Radiation Oncology, University of Louisville Hospital. All patient care activities will be checked and signed by either a Certified Medical Dosimetrist or a Certified Medical Physicist, as appropriate. The resident's progress will be reviewed by the Radiation Oncology Physics Residency Program Director quarterly.

Learning Objectives:

1. Learn simulation and virtual simulation procedures, including patient positioning, immobilization and localization. CT virtual simulation will include tumor localization, patient contours and virtual radiographic/fluoroscopic positioning of beams. Beams will be modified with custom blocking/MLC shaping. The resident will develop a simulation skill level acceptable to the faculty radiation oncologists and the rotation supervisors.
2. Learn simulator and CT-simulator quality assurance.
3. Learn computer-assisted isodose generation techniques and external beam treatment planning procedures with a 3-D treatment planning system.
4. Learn and perform Monitor Unit calculations, including: SSD/PDD, SAD/TAR/TMR/TPR, extended SSD for photons and electrons, off-axis points, heterogeneity (inhomogeneity) corrections, tissue compensation, asymmetric collimation, Sc & Sp, and enhanced dynamic/virtual wedge calculations.
5. Learn treatment plan verification, treatment record verification, Monitor Unit calculation/verification, image based (ultrasound/EPID) patient positioning, tissue compensation, information systems data entry and integrity, record and verify systems, fetal dose and pacemaker considerations.
6. Learn treatment delivery verification, in-vivo patient dosimetry methods and procedures.

(from Mills self-study)

During the six-month rotation, the radiation oncology physics resident should complete the following tasks:

1. Complete all training modules within the Stanford Dosimetry Training Tool.
2. Observe and participate in patient simulations for six months.
3. Observe and participate in patient virtual simulations for six months.
4. Perform simulator, and CT Quality Assurance for six months according to the following
   a. Perform Daily Quality Assurance checks for simulator and CT-simulator.
   b. Perform Monthly Quality Assurance checks for simulator and CT-simulator.
5. Fabricate custom Cerrobend treatment devices for one month.
   a. Fabricate custom cast and mold work for six months.
6. Plan one or more of the following external beam case types with the 3-D treatment planning system. Plans may be coplanar or non-coplanar (3D). These plans will utilize CT, MRI, PET, Ultrasound and fusion/registration imaging techniques:
   a. Breast
   b. Central nervous system (CNS) - Simple cranium
   c. Genitourinary (GU) - Prostate / Multiple and Conformal Fields
   d. Gynecological/Cervix (GYN)

   e. Gastrointestinal (GI) – Esophagus, Colon / Rectum
   f. Head and Neck (plan at least one maxillary antrum from file)
   g. Lymphoma
   h. Melanoma
   i. Pediatrics
   j. Sarcoma
   k. Thoracic (Lung with off cord)
7. Plan one of the following irregular field case types with the 3-D treatment planning system:
   a. Clarkson mantle by hand

(from Mills self-study)

j. Sarcoma
k. Thoracic (Lung with off cord)

7 Plan one of the following irregular field case types with the 3-D treatment planning system:
   a. Clarkson mantle by hand
   b. Clarkson mantle by 3-D treatment planning system
8 Assist in performing an annual calibration (using TG-51) on at least one linear accelerator. Record the results in Argus.
9 Observe and participate in patient simulations for six months.
10 Observe and participate in patient virtual simulations for six months.
11 Perform Annual Calibration on a simulator and a CT-simulator.
12 Perform all procedures to commission and the following dosimetry systems.
   a. Patient diode dosimetry
   b. Thermoluminescent dosimetry
   c. Film dosimetry system
13 Assist in performing an annual calibration (using TG-51) on at least one linear accelerator. Record the results in Argus.
14 Complete all modules within the Stanford Dosimetry Training Tool.

The Rotation Mentor will train and evaluate resident performance for QA checks and construction of devices. The radiation oncologist must approve all plans for patient use.

Readings:

1 Stanford Dosimetry Tool – all sections.
2 ICRU Report 50 Prescribing, Recording and Reporting Photon Beam Therapy (1993)
3 ICRU Report 62 Prescribing, Recording and Reporting Photon Beam Therapy (Supplement to 50) (1999)
4 XR Zhu, Entrance Dose Measurements for in-vivo dosimetry, JACMP (1) 3, 2000.
5 AF McKinlay, Thermoluminescence Dosimetry, Adam Hilger, (1981).
6 DMB Watkins, Radiation Therapy Mold Technology, Pergamon Press, (1981).
7 SK Jani, CT Simulation for Radiotherapy, Medical Physics Publishing, (1993).
8 JP Gibbons, Monitor Unit Calculations for External Photon & Electron Beams (2000).
9 GC Bentel, Radiation Therapy Planning, McGraw Hill, (1993).
10 LK Wagner, RG Lester and LR Saldana, Exposure of the Pregnant Patient to Diagnostic Radiations: A

(from Mills self-study)

Program Graduates

University of Minnesota
Medical Physics Residency Training Program

Appendix 5: Current and former Medical Physics Residents:

Resident	Start Date	Completion Date	Length of Time in Program	Medical Physics Specialty	Current Status/ Occupation	Board Certification
Guangwei Mu, Ph.D.	7/27/07		Planned 2 years	Therapeutic Radiology	Resident	
David Ellerbusch, Ph.D.	4/1/06		Planned 2 years	Therapeutic Radiology	Resident	
EunYoung Han, Ph.D.	7/1/05	6/30/07	Planned 2 years	Therapeutic Radiology	Resident	
Virginia Lockamy, Ph.D	7/1/04	Not Completed	Planned 2 years	Therapeutic Radiology	Staff Physicist	Unknown
Dickerson Moreno, Ph.D.	5/1/03	4/30/05	2 years	Therapeutic Radiology	Staff Physicist	Unknown
Dimitri Dimitroyannis, Ph.D.	7/1/02	Not Completed	Planned 2 years	Therapeutic Radiology	Staff Physicist	Unknown
Lai Leong, Ph.D.	11/1/00	11/17/02	2 years	Therapeutic Radiology	Staff Physicist	ABR
Nina Nguyen, M.S.	7/1/00	6/30/02	2 years	Therapeutic Radiology	Staff Physicist	ABR

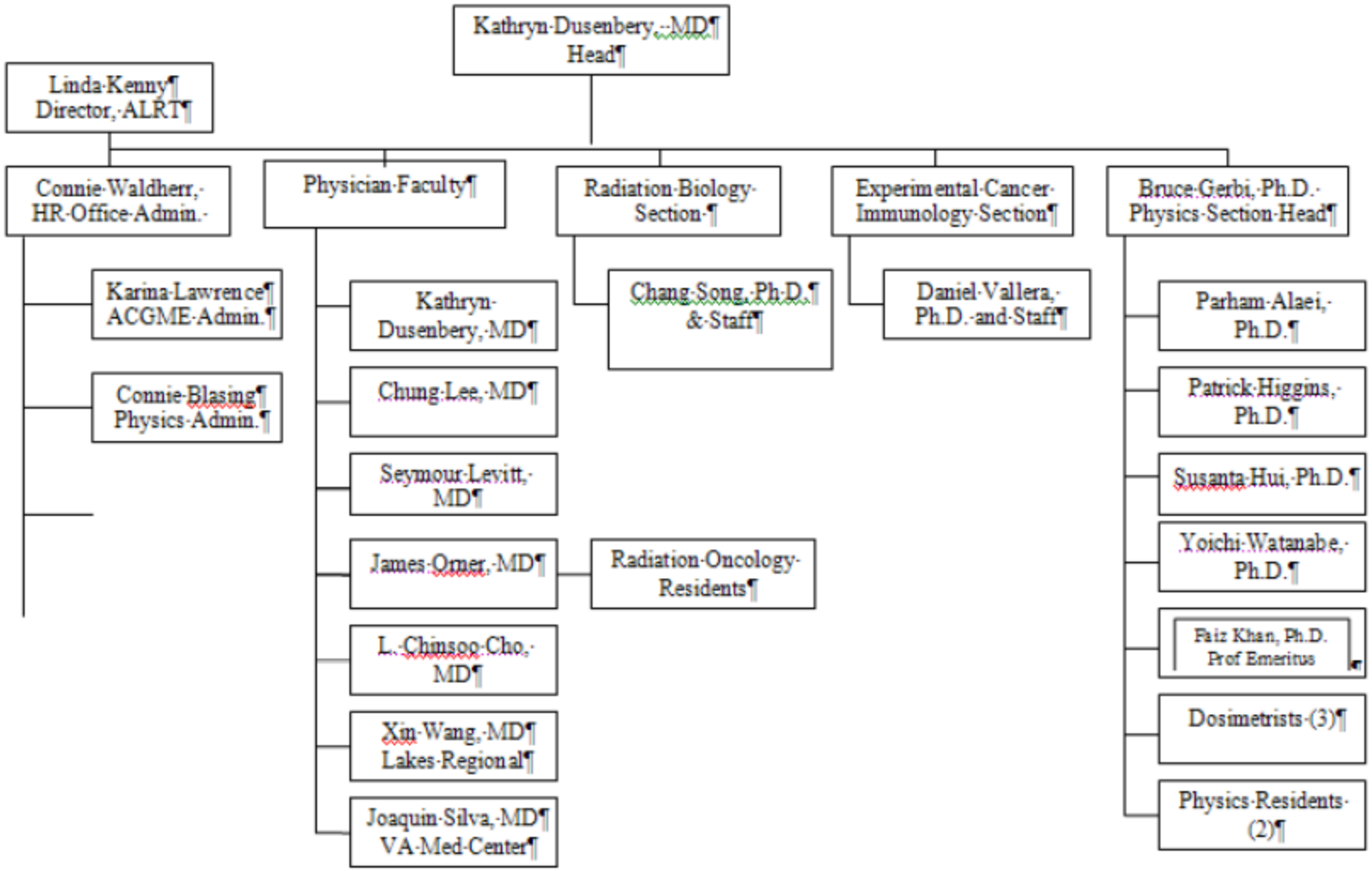
Organization and Structure

- Organizational chart
- Program supervision and reporting structure

Appendix 2: Organization Chart

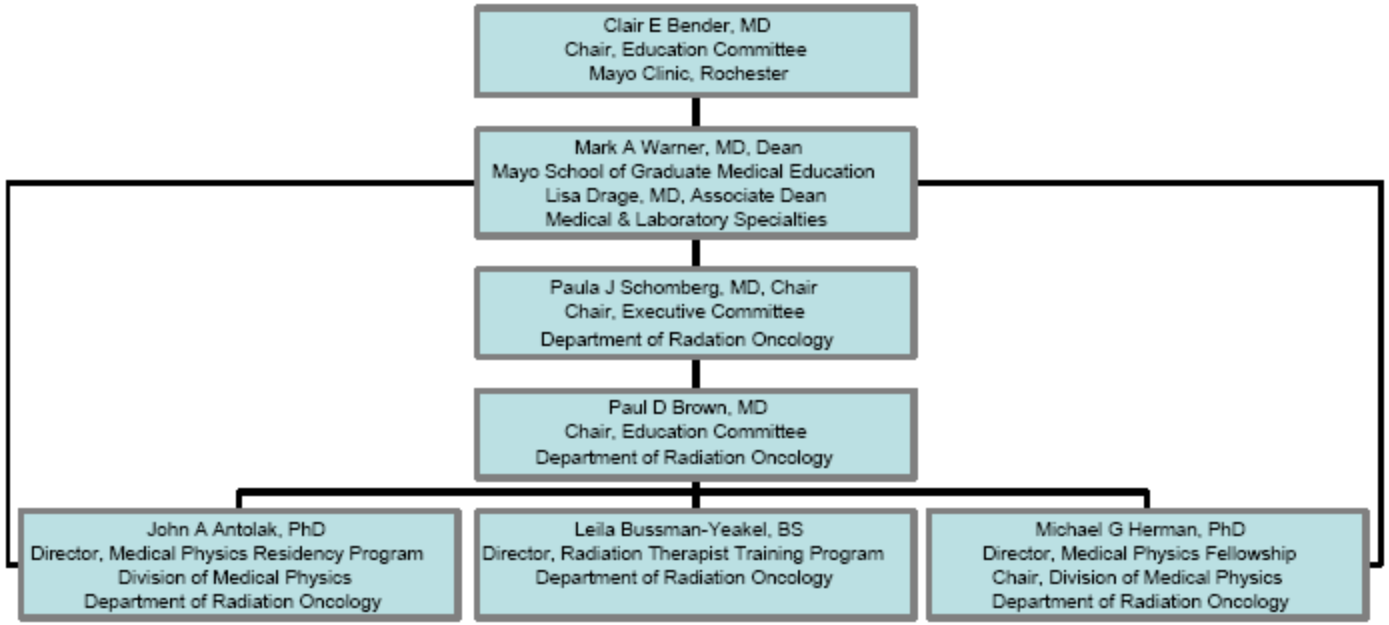
University of Minnesota Medical School

Department of Therapeutic Radiology-Radiation Oncology



Attachment 1. Program Supervision and Reporting Structure

Clinical Medical Physics Residency & Fellowship Programs
Program Supervision and Reporting Structure



Recruitment

- Position notice
- Recruiting advertisements
- Resident's job description
- Materials provided to prospective residents
  - Application information
  - Website information
- Example interview schedule
- Residency candidate evaluation form

Attachment 12. Example Advertisement

The following is an example of an advertisement placed on the AIP website. A similar advertisement is submitted to the AAPM Blue Book.

Clinical Medical Physics Residency/Fellowship
Mayo Clinic, Division of Radiation Oncology

The Department of Radiation Oncology at Mayo Clinic, Rochester, MN invites applications for residency and fellowship positions in clinical medical physics. Apply your experimental skills making a positive difference in a high technology clinical environment. Individuals will receive training in all essential aspects of clinical radiation oncology physics in our CAMPEP accredited Medical Physics Residency Program. The three year fellowship and two year residency commence in July 2007. The fellowship position also includes clinical research effort involving digital imaging, treatment planning and treatment optimization in radiation oncology. Qualified individuals should possess a recent Ph.D. in medical physics or experimental physics and have demonstrated ability to manage all aspects of an experimental research project, including data acquisition and analysis, software development and documentation. Excellent communication skills and the desire to interact with patients and other healthcare professionals is essential. The successful candidates will join a Physics Section of 7 Ph.D. faculty, 11 clinical physicists, 4 residents/fellows and computer support personnel. The Physics Section supports all aspects of the Mayo Rochester clinical radiation oncology program, research and graduate education. Please see http://www.mayo.edu/msgme/radoncology-programs.html for more information and

(from Herman self-study)

Attachment 4B: Scott & White Medical Physics Residency Program Web-Site

▾ Applicants | Contacts | ▾ GME Overview | Programs | ▾ Resident Life

Medical Physics Residency

Applying to the Program
Interview Information
Program Curriculum

Staff

Faculty

Related Topics

Medical Physics
Radiology

Medical Physics Residency Program

The Scott & White Medical Physics Residency program was founded to produce well-rounded medical physicists specially trained to provide technical support for comprehensive management of cancer.

Apply Now »

Through our rotation-based regimen of Socratic learning experiences, Scott & White Medical Physics residents incorporate lifelong learning into their practice of medical physics, delivering the highest quality care to the support that radiation oncologists and the staff of a radiation oncology department needs to provide the highest standards of cancer management.

Bookmark this Page | Print this Page | Resize Text

Applying to the Program

The Medical Physics Residency program applicants must demonstrate a strong foundation in basic physics. This shall be documented by a master's or doctoral degree in medical physics, physics, engineering, mathematics or other science with physics training equivalent to a minor in physics (upper level courses in electricity and magnetism, quantum mechanics, atomic structure, statistical mechanics and mechanics).

Recruiting will begin in the first calendar quarter. Following a response, the program director will contact applicants and discuss the program, their interests and what information they might need. Subsequent to this conversation, the resident applicant will receive the following:

Application Assistance

Alexandra Smiley
Program Coordinator
2401 S. 31st St.
Temple, TX 76508

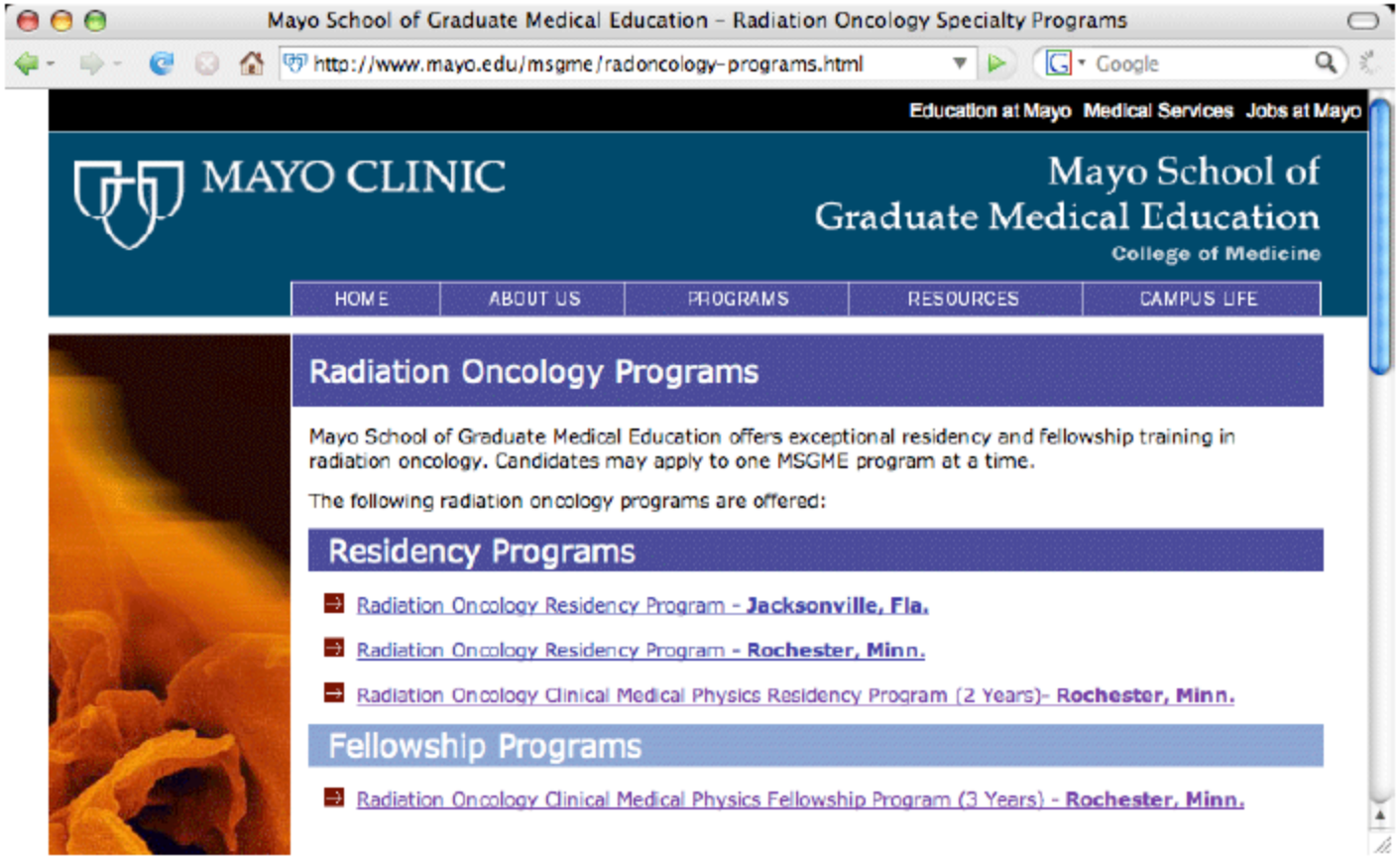
E-mail:
asmiley@swmail.sw.org

Phone:
254-724-4051

Fax:

Attachment 13. MSGME Radiation Oncology Home Page

The following picture shows the Mayo School of Graduate Medical Education (MSGME) Radiation Oncology page, where the Clinical Medical Physics Residency and Fellowship programs are listed.



The following picture shows the MSGME page for the Clinical Medical Physics Residency program. The MSGME page for the Fellowship program is similar.

Attachment 9. Example Resident Interview Schedule

<<Interviewee Name>>

Medical Physics Residency Interview

<<Interview Date>>

Begin		End	Meeting With	Location
8:00	–	8:30	Welcome Session Michael G. Herman, Ph.D. Medical Physics Fellowship Program Director John A. Antolak, Ph.D. Medical Physics Residency Program Director	Ch-S-243
8:30	–	9:30	30 Minute Presentation followed by Group Interview with Physics Consultants, Clinical Physicists, and Medical Physics Fellows and Residents **Presentation:** <<*Presentation Title Here*>>	Ch-S-243
9:30	–	10:15	Interview with Jann N. Sarkaria, M.D. Radiation Oncology Medical Staff Consultant	Ch-S-124
10:30	–	11:15	Interview with Paul D. Brown, M.D. Radiation Oncology Medical Staff Consultant and Radiation Oncology Medical Program Director	Ch-S-126
11:30	–	1:00	Lunch with Medical Physics Fellows and Resident Drs. Houssam Abou Mourad, Yildirim Mutaf, Kathy Kolsky, Steve Ratliff, Luis Fong	Pappa George Restaurant
1:00	–	1:30	Michael G. Herman, Ph.D. Physics Consultant and Education Program Director	Ch-S-131
1:30	–	2:00	Keith M. Furutani, Ph.D.	Ch-S-117

Attachment 10. Clinical Medical Physics Residency Candidate Evaluation Form

RANK_____

Clinical Medical Physics Residency Candidate Evaluation Form

Name of Candidate: KOVALCHUK, Nataliya

Date of Interview: _____**February 5, 2008**_____

Scores:

_____Interest, reasons for candidacy for this residency
_____Knowledge of Radiation Oncology Medical Physics
_____Technical skill set including experimental experience
_____Application (references, transcripts, etc.)
_____Communication and interaction skills
_____Initiative and Productivity

Scale
1 = outstanding
2 = excellent
3 = good
4 = satisfactory
5 = unacceptable

Overall Score: _____ (does NOT have to be your average score)

Comments:
_____
_____
_____
_____
_____

Interviewer Name: John A. Antolak, Ph.D.

Interviewer Signature: _____ **Date:** _____

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Resident related

- Resident handbook
- Orientation schedule
- Resident policies
- Compensation and benefits
- Probation and dismissal policy

Resident Orientation Schedule

Attachment 8: Resident Orientation Schedule

SCOTT & WHITE
Radiation Oncology Physics Resident
Orientation Schedule

Thursday June 26, 2008	
7:30-8:00	Sign-in, Meet & Greet
8:00-9:00	Welcome, Announcements & Icebreaker
9:00-9:15	"What Makes S&W Unique?"
9:15-9:50	Employee Development
9:50-10:30	Employee Health Services, Infection Control & Nursing Announcements
10:30-10:40	Break
10:40-11:25	Environment of Care & Patient Safety
11:25-11:45	Security Management
11:45-11:50	Break
11:50-12:30	Lunch & A Movie
12:30-1:00	Healthy Back
1:00-1:15	Risk Management & Basic Patient Rights
1:15-1:55	Corporate Compliance
1:55-2:10	Identifying Victims of Abuse
2:10-2:15	Break
2:15-2:30	Employee Recognition

SCOTT & WHITE
Radiation Oncology Physics Resident
Orientation Schedule

	Friday, June 27, 2008	
8:00 – 10:00	Introduction to the Radiation Oncology Physics Residency documents	Physics Division Program Director Room 116
10:00 – 10:15	Break	
10:15 – 11:45	Resident Entry Assessment Examination	Physics Division
12:00 – 1:00	Lunch Break	
1:00 – 3:00	COMPUTER TRAINING	312 & 313 – Conf Ctr
	Monday June 31, 2008	
8:00 – 8:30	Meet with Rotation I Mentor	
8:30 - 9:00	Meet with Rotation II Mentor	
9:00 – 9:30	Meet with Rotation III Mentor	
9:300 - 10:00	Meet with Rotation IV Mentor	
10:00 – 10:30	Meet with Rotation V&VI Mentors	
10:30 – 11:00	Meet with Rotation VII Mentor	
11:00 – 11:30	Meet with Rotation VIII Mentor	

Lectures, conferences, equipment

- Medical physics didactic lecture series schedule
- Course descriptions and summaries
- Conferences and seminars
- List of physics instruments and equipment

Evaluation Forms

- Resident clinical rotation evaluation form
- Faculty oral exam evaluation form
- Program director's resident evaluation form
- Resident evaluation of program and faculty

Committee information

- Committee descriptions and reporting structure
- Committee minutes


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