Norbury Revision April 2, 2014

NASA Space Radiation Summer School

2014 SCHEDULE: May 30 – June 20, 2014, BROOKHAVEN NATIONAL LABORATORY

	SUN	MON	TUES	WED	THURS	FRI	SAT
WEEK 1		May 26	May 27	May 28	May 29	May 30	May 31
8:30 am		*Memorial Day Holiday*		**Students' arrival at BNL all day** **Security/Housing** (Check into Housing & Begin GUV Center processing if possible) Commence: Training Audit, Obtain BNL Photo IDs & Computer Access Cash Checks at Credit Union (if needed)	NASA Summer School Opening		**FREE TIME**
9:00 am					Continue: Training Audit, Obtain BNL Photo IDs & Computer Access Cash Checks at Credit Union (if needed)	NSRL Facility Radiobiology Users Training: 9-10:30am Iris scans and TLDs from 10:30-12 noon (Building 911 Snyder Seminar Room)	
10:00 am							
11:00 am							
12:00 pm					LUNCH	LUNCH	
12:30 pm					**<u>Radiological Worker Classroom Training and Exam: 2-4:30 pm Medical Building</u>**	1:00 – 2:00 pm BNL Tour +Group Photo (Tara Shiels) Start at Medical, Bld 490	
2:00 pm			Norbury Arrival at BNL			Complete iris scans and issuing of TLDs (if needed)	
3:00 pm						Elementary Radiation Physics (Norbury)	
4:00 pm						Elementary Radiation Biology (Nelson)	
5:00 pm						5:30 pm Student Welcome / BBQ – Brookhaven Center Patio ***Catered***	

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Week 2	June 1	June 2	June 3	June 4	June 5	June 6	June 7
8:30 am	FREE TIME	Medical Dept. Welcome & Program Goals (Norbury, Guida, Ward)	Medical Dept. Daily Briefing	Medical Dept. Daily Briefing	Medical Dept. Daily Briefing	Medical Dept. Daily Briefing	FREE TIME
9:00 am		NASA's Mission & Roadmap (Simonsen)	Radiobiology 2 (Hall)	Heavy Ions and Shielding Physics, including Neutrons (Heilbronn)	Chromosome Rearrangements (Morgan)	Space Radiation Environment (Zeitlin)	
10:00 am		What is Radiation? (Borak)	Radiation Chemistry & DNA Damage (Held)		Mutagenesis (Kronenberg)	Accelerator Physics and Space Simulation (Zeitlin)	
11:00 am		*Break*	*Break*	*Break*	*Break*	*Break*	
11:30 am		Radiation Interactions with Matter (Borak)	Dose responses, LET & RBE (Held)	Physics Homework/ problems (Heilbronn)	Radiosensitivity and Cell Cycle (Joiner)	Radiation-induced Instability (Kronenberg)	
12:30 pm		*Lunch*	*Lunch*	*Lunch*	*Lunch*	*Lunch*	
1:30 pm		Introduction to Radiation Dosimetry (Borak)	PhysicsTool Kit (Nelson)	1:30-3:00 Programmed Cell Death (Kronenberg)	Effects on Embryo, Fetus, Transgenerational (Joiner)	Track Structure 1 (D.Goodhead)	
2:30 pm		Radiobiology I (Hall)	Physics Chalk Talk/problems	*3:00 Break*	Dose Rate Effects (Joiner)	Track Structure 2 (D.Goodhead)	
3:30 pm		*Break*	*Break*	3:15 DNA Repair (Wallace)	*Break*	*Break*	
4:00 pm		Principles of Radiation Protection (Borak)	Radiation detection methods (Borak/Heilbronn)		Systems Biology of Radiation (Morgan)	NSRL Dosimetry (Rusek)	
5:00 pm		Faculty Panel	Faculty Panel	Faculty Panel	Faculty Panel	Faculty Panel	
5:30 pm	*7:00 pm Evening Activity with G. Nelson*	6:00–7:30 pm Faculty Reception – Large Conference Room -- ***Catered***	End	End	End	End	

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	SUN	MON	TUES	WED	THURS	FRI	SAT
WEEK 3	June 8	June 9	June 10	June 11	June 12	June 13	June 14
8:30 am		Medical Dept. Daily Briefing	LAB DAY - NSRL (Kronenberg & Guida)	Medical Dept. Daily Briefing	Medical Dept. Daily Briefing	8:30-11:30 <u>8:30 All start at NSRL</u> <u>First ½ Stay at NSRL</u> for LAB Day - NSRL (Rusek) with Beam Time <u>Second ½ at Medical</u> Work on Beam Time Proposals, etc.	FREE TIME
9:00 am		Biology Experiment Overview for 6/10 (Kronenberg/Guida) & Biology Review (Kronenberg)	Beam Time 9:00–2:00	Animal Studies (Weil)	3D Cell Culture Models (Shay)		
10:00 am				Genetics of Animal Studies (Weil)	Biol Countermeasures For Radiation Protection (Shay)		
11:00 am		*Break*	*Break*	*Break*	*Break*		
11:30 am		Accelerators (Lowenstein)	LAB	Space Radiation (Norbury)	11:30-12:30 Visit to Tandem Van de Graaff (Chuck Carlson)	*11:30-11:45 Return to Medical Dept.*	
12:30 pm		*Lunch*	*Lunch*	*Lunch*	*Lunch*	*11:45-1:00* Space Radiation Transport (Norbury)	
1:30 pm		Low-LET Reference Radiation (Sivertz)	LAB	Leukemia (Weil)	1:30 – 4:30 pm: LAB In 2 Groups: 1. Flow Cytometry (Guida) 2. DNA Damage, etc. (Angela Kim)	*1:00-2:30 Lunch*	
2:30 pm		Acute Effects (Kennedy)	LAB	Beam Time Proposals Homework, Questions		2:30-5:00 <u>Second ½ at NSRL</u> For LAB Day - NSRL (Rusek) with Beam Time <u>First ½ at Medical</u> Work on Beam Time Proposals, etc.	
3:30 pm		*Break*	*Break*	*Break*			
4:00 pm		Epigenetics (Turker)	Non-targeted Effects (Azzam)	High/Low LET Microbeams (Randers-Pehrson)	Experimental Plan for Tomorrow (Rusek/Guida)		
5:00 pm		Faculty Panel	Faculty Panel	Faculty Panel		Faculty Panel	
5:30 pm		End	End	End	End	End	

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WEEK 4	June 15	June 16	June 17	June 18	June 19	June 20	June 21
8:30 am	FREE TIME	Medical Dept. Daily Briefing	Medical Dept. Daily Briefing	Medical Dept. Daily Briefing	Medical Dept. Daily Briefing	Medical Dept. Daily Briefing	DEPARTURE
9:00 am		Tool Kit Practical (Nelson)	Omics Technologies (Story)	CNS Effects (O'Banion)	Space Radiation Protection & Risk (Schimmerling)	Review Of Beam Time Proposals (5 min presentation +feedback)	
10:00 am		NSRL Simul(GERMcode) (Myung Hee Kim)	Transgenic Models and New Imaging approaches (Kirsch)	Space Flight Measurements (Nelson)	Radiation-Induced Cell Signaling (Boothman)	Review Of Beam Time Proposals (contd)	
11:00 am		*Break*	*Break*	*Break*	*Break*	*Break*	
11:30 am		RITRACKS Track structure Simulations (Plante)	Cancer Stem Cells (Kirsch)	Microgravity Effects (Nelson)	Cataracts (Ellie Blakely)	Review Of Beam Time Proposals (contd)	
12:30 pm		*Lunch*	*Lunch*	*Lunch*	*Lunch*	*Lunch*	
1:30 pm		Beam Time Proposals (Nelson)	Cardiovascular Effects (O'Banion)	Review Time (Nelson)	Heavy Particle Therapy (Ellie Blakely)	Student Team Presentations (~20 min each)	
2:30 pm		Haematopoietic & Immune Response (Nelson)	Neurogenesis (Fike)	LAB TIME	Prepare Final Presentations. Beam Time Proposals Due		
3:30 pm		*Break*	*Break*	*Break*	*Break*	*Break*	
4:00 pm		Beam Time Proposals (Nelson)	Radiation Effects on Neurons & Stem Cells (Fike)	Work On Presentations	Faculty Panel	Closing Ceremony Large Conf Room ***Catered***	
5:00 pm		Faculty Panel	Faculty Panel	7–10 PM Key Note Lecture (Dr. Ellen Stofan) ***Catered***			
5:30 pm		End	End		End	End	