Latin American Training Program 2019

ENLIGHTENING THE BRAIN: THE USE OF LIGHT TO UNDERSTAND THE FUNCTION OF THE NERVOUS SYSTEM

Institute for Cellular Physiology (IFC)
National Autonomous University of Mexico (UNAM)

ORGANIZERS

Francisco Fernández de Miguel, PhD
Director
IFC, UNAM

Dilia Aguirre Olivas, PhD
Co-Director
IFC, UNAM

LOCAL ORGANIZING COMMITTEE

Sorel A. Achounna, M. Sc.
IFC, UNAM

Guillermo Hernández Mendoza, M. Eng.
IFC, UNAM

Bruno Méndez Ambrosio, M. Eng.
IFC, UNAM

Sharlen Moore Corona. PhD
IFC, UNAM

Naser Qureshi, PhD
Institute of Applied Sciences and Technology
UNAM

Ruth Rincón Heredia, PhD
IFC, UNAM

Yazmín Ramiro Cortés, PhD
IFC, UNAM

María Celeste Sánchez Sugía, BSc. Psych.
IFC, UNAM

Carlos Treviño Palacios, PhD
National Institute of Astrophysics, Optics and Electronics
Department of Optics, Mexico

FACULTY

Francisco J. Barrantes, PhD
Pontificia Universidad Católica de Argentina

Luis Concha Loyola, PhD
Institute of Neurobiology
UNAM

María Angela Franceschini, PhD
Harvard Medical School, USA
Massachusetts General Hospital, USA

Jesus Garduño Mejía, PhD
Center for Applied Sciences and Technological Development
UNAM, Mexico

León Islas Suárez, PhD
School of Medicine, Cellular and Molecular Biophysics
UNAM, Mexico

Raman Kashyap, PhD
Montreal Polytechnic
Department of Electrical Engineering and Department of Engineering Physics

Diane Lipscombe, PhD
President of the Society of Neuroscience
Brown University neuroscience, USA

Laura López-Mascaraque, PhD
Cajal Institute
Madrid, Spain

Pablo Loza-Alvarez, PhD
The Institute of Photonics Sciences
Barcelona, Spain.

Braulio Gutiérrez Medina
Division of Advanced Materials
Instituto Potosino de Investigación Científica y Tecnológica, Mexico

Abraham Rosas Arellano, PhD
IFC, UNAM

Fatuel Tecuapetla, PhD
IFC, UNAM

Weijian Yang, PhD
Department of Electrical and Computer Engineering
University of California, USA

PROGRAM

DAILY SCHEDULE

Week of: **August 26**

	8/26 MONDAY	8/27 TUESDAY	8/28 WEDNESDAY	8/29 THURSDAY	8/30 FRIDAY	8/31 SATURDAY	9/1 SUNDAY
9:00 AM	**Opening Introduction to School** (Francisco F. de Miguel, Dilia Aguirre Olivas)	**Daily work review** (Dilia Aguirre Olivas)	**Daily work review** (Carlos Treviño Palacios)	**Analysis of results** (León Islas Suárez)	**Daily work review** (Pablo Loza)	**Cultural Tour through Mexico City**	**Day Off**
9:30 AM		**Introduction** (Carlos Treviño Palacios)	**Introduction** (León Islas Suárez)	**Introduction** (Pablo Loza Álvarez)	**Introduction** (Yazmín Ramiro Cortés)		
10:00 AM	**Discution with Students (Diane Lipscombe)**	**How to build a microscope Part II** (Carlos Treviño Palacios, Bruno Méndez Ambrosio, Naser Qureshi , Jesús Garduño Mejía)	**Experiment on molecular energy transfer** (León Islas Suárez), **Transfection of animals for optegenetic experiments I** (Fatuel Tecuapetla)	**Home-made light sheet microscope** (Pablo Loza Álvarez)	**Comparative work on electron-confocal and multiphoton microscopy** (Yazmín Ramiro Cortés, Ruth Rincón Heredia y Abraham Rosas Arellano)		
10:30 AM							
11:00 AM	**Introduction to light and its properties** (Guillermo Hernández Mendoza, Dilia Aguirre Olivas)						
11:30 AM							
12:00 PM	**Naser Qureshi**	**León Islas Suárez**	**Pablo Loza Álvarez**	**Raman Kashyap**	**Weijian Yang**		
12:30 PM							
1:00 PM	Lunch Break						
1:30 PM							
2:00 PM	**How to build a microscope Part I** (Carlos Treviño Palacios, Bruno Méndez Ambrosio, Naser Qureshi , Jesús Garduño Mejía)	**How to build a microscope Part II** (Carlos Treviño Palacios, Bruno Méndez Ambrosio, Naser Qureshi , Jesús Garduño Mejía)	**Experiment on molecular energy transfer** (León Islas Suárez), **Transfection of animals for optegenetic experiments** (Fatuel Tecuapetla)	**Home-made light sheet microscope** (Pablo Loza Álvarez)	**Comparative work on electron-confocal and multiphoton microscopy** (Yazmín Ramiro Cortés, Ruth Rincón Heredia y Abraham Rosas Arellano)		
2:30 PM							
3:00 PM							
3:30 PM							
4:00 PM							
4:30 PM							
5:00 PM		**How to build scientific carrer in Neuroscience** (Diane Lipscombe)					
5:30 PM							

DAILY SCHEDULE

Week of: **September 2**

	9/2 MONDAY	9/3 TUESDAY	9/4 WEDNESDAY	9/5 THURSDAY	9/6 FRIDAY	9/7 SATURDAY	9/8 SUNDAY
9:00 AM	**Daily Work Review** (Yazmín Ramiro Cortés, Ruth Rincón Heredia y Abraham Rosas Arellano)	**Daily Work Review** (Yazmín Ramiro Cortés, Ruth Rincón Heredia y Abraham Rosas Arellano)	**Daily Work Review** (Yazmín Ramiro Cortés, Ruth Rincón Heredia y Abraham Rosas Arellano)	**Daily Work Review** (Carlos Treviño Palacios y Bruno Méndez Ambrosio)	**Daily Work Review** (Carlos Treviño Palacios y Bruno Méndez Ambrosio)	**Excursion to Archeological Zone of Teotihuacan**	**Day Off**
9:30 AM		**Introduction** (Jesus Garduño Mejía)	**Introduction to spectroscopy caracterization on molecules** (Dilia Aguirre Olivas)		**Introduction** (Guillermo Hernández Mendoza, Dilia Aguirre Olivas)		
10:00 AM	**Comparative work on electron-confocal and multiphoton microscopy** (Yazmín Ramiro Cortés, Ruth Rincón Heredia y Abraham Rosas Arellano)	**Comparative work on electron-confocal and multiphoton microscopy** (Yazmín Ramiro Cortés, Ruth Rincón Heredia y Abraham Rosas Arellano)	**Infrared Optical Methods on Brain Activity** (Carlos Treviño Palacios y Bruno Méndez Ambrosio)	**Infrared Optical Methods on Brain Activity** (Carlos Treviño Palacios y Bruno Méndez Ambrosio)	**Non-linear microscopy, Spectroscopy and Structured Light** (Guillermo Hernández Mendoza, Dilia Aguirre Olivas)		
10:30 AM							
11:00 AM							
11:30 AM							
12:00 PM	**Yazmín Ramiro Cortés**	**Laura López-Mascaraque**	**Dilia Aguirre Olivas**	**Brulio Gutiérrez Medina**	**Maria Angela Franceschin**		
12:30 PM							
1:00 PM	Lunch Break						
1:30 PM							
2:00 PM	**Comparative work on electron-confocal and multiphoton microscopy** (Yazmín Ramiro Cortés, Ruth Rincón Heredia y Abraham Rosas Arellano)	**Comparative work on electron-confocal and multiphoton microscopy** (Yazmín Ramiro Cortés, Ruth Rincón Heredia y Abraham Rosas Arellano)	**Infrared Optical Methods on Brain Activity** (Carlos Treviño Palacios y Bruno Méndez Ambrosio)	**Infrared Optical Methods on Brain Activity** (Carlos Treviño Palacios y Bruno Méndez Ambrosio)	**Non-linear microscopy, Spectroscopy and Structured Light** (Guillermo Hernández Mendoza, Dilia Aguirre Olivas)		
2:30 PM							
3:00 PM							
3:30 PM							
4:00 PM							
4:30 PM							
5:00 PM							
5:30 PM							

DAILY SCHEDULE

Week of: **September 9**

	9/9 MONDAY	9/10 TUESDAY	9/11 WEDNESDAY	9/12 THURSDAY	9/13 FRIDAY	9/14 SATURDAY
9:00 AM	**Daily Work Review** (Ruth Rincón Heredia)	**Daily Work Review** (Jesús Garduño Mejía)	**Daily Work Review** (Jesús Garduño Mejía)	**Conductual Tracking** (Fatuel Tecuapetla)	**Daily Work Review** (Francisco F. de Miguel)	**Back Home**
9:30 AM	**Introduction** (Laura López-Mascaraque)		**Introduction** (Fatuel Tecuapetla)			
10:00 AM	**Z-scan and ultrashort pulse measurement** (Jesús Garduño Mejía)	**Z-scan and ultrashort pulse measurement** (Jesús Garduño Mejía)	**Optogenetics Induction of Selective Behavior** (Fatuel Tecuapetla)		**STED and STORM** (Dilia Aguirre Olivas,Francisco Barrantes)	
10:30 AM						
11:00 AM				**Introduction to Second Harmonic Generation** (Francisco F. de Miguel)		
11:30 AM						
12:00 PM	**To be confirmed**	**Fatuel Tecuapetla**	**Francisco F. de Miguel**	**Luis Concha Loyola**	**Francisco Barrantes**	
12:30 PM						
1:00 PM	Lunch Break					
1:30 PM						
2:00 PM	**Non-linear microscopy, Spectroscopy and Structured Light** (Guillermo Hernández Mendoza, Dilia Aguirre Olivas)	**Non-linear microscopy, Spectroscopy and Structured Light** (Guillermo Hernández Mendoza, Dilia Aguirre Olivas)	**Optogenetics Induction of Selective Behavior** (Fatuel Tecuapetla)	**Analysis of Estructural Dinamics using Second Harmonic Generation** (Francisco F. de Miguel)	**Demonstration of STED nanoscopy** (Guillermo Hernández Mendoza, Dilia Aguirre Olivas)	
2:30 PM						
3:00 PM						
3:30 PM						
4:00 PM					**General Discusion**	
4:30 PM						
5:00 PM						
5:30 PM						
6:00 PM						
6:30 PM						
7:00 PM					**Dinner**	