

Respiratory Viruses: A Focus on COVID-19 ARC

Director, Dr. Markus Bosmann, Pulmonary Center

Co-Director, Dr. Mohsan Saeed, NEIDL, Biochemistry

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SARS-CoV-2 has caused a global pandemic, leading to an unprecedented public health crisis within a few months. There is an urgent need to gain better insights into the pathogenesis of localized SARS-CoV-2 infection in the lung and its distant organ complications. In this Affinity Research Collaborative (ARC), a multi-disciplinary researcher team of Boston University (BUMC, CRC) will develop and test novel cell cultures systems to dissect how this virus invades the lung and other organs, how it replicates inside cells, and how it is recognized and counteracted by the host immune defence. Using mouse models of the disease, studies will also focus on life-threatening complications, such as Acute Respiratory Distress Syndrome (ARDS), sepsis, multi-organ failure, coagulopathy, and the role of co-infections, co-morbidities, sex and age. These directions will serve as a translational platform for pre-clinical models of SARS-CoV-2 infection to design innovative diagnostics, preventive agents and facilitate the drug development process. Bidirectional translational interactions between basic scientists, clinicians and epidemiologists will be embedded in the existing infrastructures, science networks and the collaborative culture of BU. *In a broader perspective*, this ARC initiative aspires to strengthen the preparedness for outbreaks of contagious respiratory viruses in the future. Hence, we envision this ARC platform to set the stage for self-sustaining extramurally funded research programs of other respiratory viral illnesses modelled on investigative pursuits carried out here.

Specific Aims of Research:

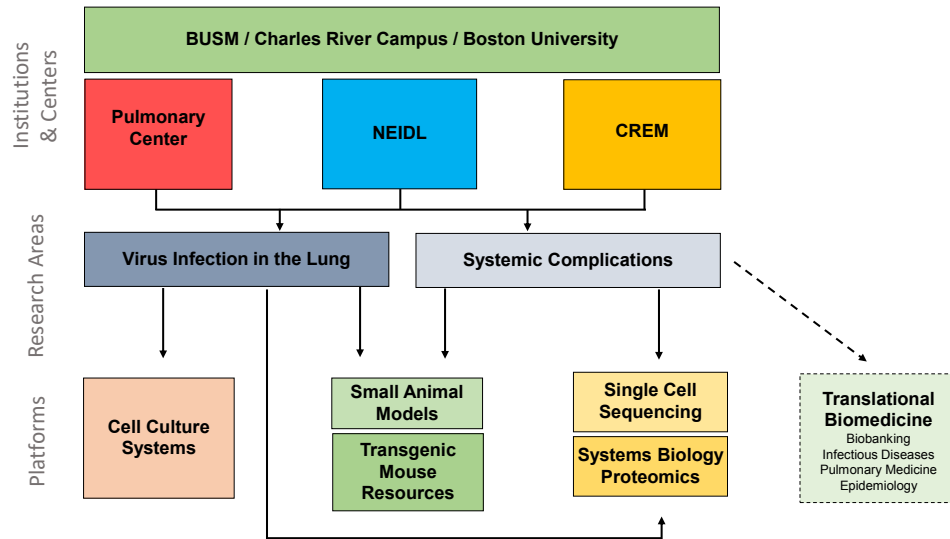
Aim 1: To promote a collaborative, interdisciplinary and inclusive BU community of respiratory virus researchers and infrastructure.

Aim 2: To establish *in vitro* and *in vivo* models of virus infection.

Aim 3: To study the cellular and physiological mechanisms of local and systemic disease.

ARC - Respiratory Viruses: A Focus on COVID-19

Organigram 04/2020



Participating Members

Name	Degree / Academic Title	Dept / Section	Email
Markus Bosmann ARC Director	MD / Assoc Prof	Pulmonary / Med, Pathology & Lab Med	mbosmann@bu.edu 617-358-1225
Mohsan Saeed ARC Co-Director	PhD / Assist Prof	NEIDL / Biochemistry	msaeed1@bu.edu 617-358-9499
Kristine Abo	Post Doc		kabo@bu.edu Not available
Yuriy Alekseyev	PhD / Res Assoc Prof	Clin / Pathology & Lab Med / Single Cell Core	yurik@bu.edu 617-414-1369
Konstantinos Dionysios Alysandratos	MD, PhD / Assist Prof	CRem / Pulmonary	kalysa@bu.edu 617-414-2969
Nahid Bhadelia	MD	BMC / Infectious Disease	Not available 617-414-5246
Eric Burks	Clin Assoc Prof /	Medicine / Pathology & Laboratory Medicine	ejburks@bu.edu 617-414-4283
Joshua Campbell	PhD / Assist Prof	Medicine / Computational Biomed	camp@bu.edu 617-358-7260
David Center	MD / Assoc Provost	CTSI, Director / Pulmonary	dcenter@bu.edu 617-638-4860
Kevin Chandler	Instructor	Biochemistry	kbc36@bu.edu 617-358-4280
Vipul Chitalia	MD / Assoc Prof	Medicine / Nephrology	vichital@bu.edu 617-414-1773

John Connor	PhD / Assoc Prof	NEIDL / Microbiology	jhconnor@bu.edu 617-638-0339
Rena Conti	PhD / Assoc Prof, Assoc Res Dir Institute for Health System Innovation and Policy	Questrom / Markets, Public Policy & Law	rconti@bu.edu 617-353-1156
Ronald Corley	PhD / Prof	NEIDL, Director	rbcorley@bu.edu 617-358-9177
Catherine Costello	PhD / Prof, Biochemistry, Biophysics and Chemistry	Director, Center for Biomedical Mass Spectrometry	cecsm@bu.edu 617-358-2433
Nicholas Crossland	DVM / Assist Prof	Medicine / Pathology & Laboratory Medicine	ncrossla@bu.edu 617-358-9285
Robert Davey	PhD / Prof	NEIDL / Microbiology	radavey@bu.edu 617-358-9166
Florian Douam	PhD / Assist Prof	NEIDL / Microbiology	fdouam@bu.edu 617-358-9175
Andrew Emili	PhD / Prof	Biology	aemili@bu.edu 617-353-2432
Alan Fine	MD / Prof	Pulmonary	afine@bu.edu 617-638-4806
Valerie Gouon-Evans	PhD, PharmD / Assoc Prof	CRem / Gastro	valerige@bu.edu 617-414-2971
Anthony Griffiths	PhD / Assoc Prof	NEIDL / Microbiology	ahgriff@bu.edu 617-358-2900
Rahm Gummuluru	PhD / Prof, VC Microbiology	NEIDL / Investigator, Director, Developmental Core, Providence/Boston Center for AIDS Res (Prov/Bos CFAR)	rgummulu@bu.edu 617-358-1774
Finn Hawkins	MBBCh / Assist Prof	CRem / Medicine	Finn.Hawkins@bmc.org 617-638-4860
Adam Hume	PhD / Sr Res Scientist	NEIDL / Microbiology / Muhlberger Lab	hume@bu.edu 617-358-9151
Elaine Hylek	MD / Prof	Medicine / Gen Internal Med	Elaine.Hylek@bmc.org 617-414-3743
Laertis Ikononou	PhD / Assist Prof	CRem / Pulmonary	laertis@bu.edu 617-358-1033
Yang Jin	MD, PhD / Assoc Prof	Medicine	yjin1@bu.edu 617-638-4860
Matthew Jones	PhD / Assoc Prof	Medicine / Pulmonary	mattj@bu.edu 617-638-4860
Darrell Kotton	MD / Prof	CRem / Pulmonary	dkotton@bu.edu 617-414-2971
Weining Lu	MD, MS, FASN / Assoc Prof	Medicine / Medicine, Pathology & Laboratory Medicine	wlu@bu.edu 617-414-1770

		Nephrology Section	
Sarah Anne Mazzilli	PhD / Assist Prof	Medicine / Computational Biomed	mazzilli@bu.edu 617-358-7269
Jay Mizgerd	ScD / Prof	Pulmonary Microbiology	jmizgerd@bu.edu 617-358-1186
Gustavo Mostoslavsky	PhD / Assoc Prof	CRem / Gastro	gmostosl@bu.edu 617-358-1018
Elke Mühlberger	PhD / Assoc Prof	NEIDL / Microbiology, Dir Biomolecule Production Core	muehlber@bu.edu 617-358-9153
Lee Quinton	PhD / Assoc Prof	Medicine	lquinton@bu.edu 617-358-1087
Nader Rahimi	PhD / Assoc Prof	Medicine / Pathology	nrahimi@bu.edu 617-638-2432
Vasan Ramachandran	MD / Section Chief, Prof	Medicine / Preventative Med & Epi	vasan@bu.edu 617-358-1310
Katya Ravid	DSc / Prof	IBRO, Director / Medicine, Biochem, WCVI,	kravid@bu.edu 617-358-8242
Daniel Remick	MD / Prof	Medicine / Pathology & Laboratory Medicine	remickd@bu.edu 617-358-2731
Francesca Seta	PhD / Assist Prof	Medicine, Vascular Biology, WCVI / Dir, Metabolic Phenotyping & IVIS Imaging Core	setaf@bu.edu 617-358-7814
Katrina Traber	MD, PhD / Assist Prof	Medicine	katraber@bu.edu 617-638-5214
Xaralabos 'Bob' Varelas	PhD / Assoc Prof	Biochemistry	xvarelas@bu.edu 617-358-4575
Ruby Wang	MD / Assist Prof	Pulmonary Medicine	Ruobing.Wang@childrens.harvard.edu [300 Longwood Ave] 617-355-1900
Andrew Wilson	MD / Assoc Prof	CRem / Pulmonary	Andrew.Wilson@bmc.org 617-638-4860
Grace Zhao	MD PhD / Assist Prof	Chief & Vice Chair for Anatomic Pathology, Dept of Pathology and Laboratory Medicine	Grace.Zhao@bmc.org 617-414-5339

Olivia Tsai Hix	Res Study Technician	CreM	ohix@bu.edu 617-358-1860
Jessie Huang	Post Doc	CreM	hjess@bu.edu 617-414-2969
Konstantinos Kontodimas	Res Assist, Bosmann Lab	Technician / Pulmonary	kosta98@bu.edu 617-358-1225
Andrew Tilston-Lunel	Post Doc, Varelas Lab	Biochemistry	alunel@bu.edu 617-638-4184
Arjun Sharma	Res Fellow, Bosmann Lab	Pulmonary	arjunyug@bu.edu 617-358-1424
Chantelle Simone	Res Assist	Stem cell technician	Chantelle.Simone@chil

			drens.harvard.edu
Jacquelyn Turcinov	PhD student, Connor Lab	NEIDL /	
Jose Carlos Villacorta Martin	PhD / Res Fellow	CReM	cvmar@bu.edu 617-414-2969
Rhiannon Werder	Post Doc	CreM / Wilson Lab	rwerder@bu.edu 617-414-2969