BIOGRAPHICAL SKETCH

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NAME: Paul Gottlieb

eRA COMMONS USER NAME (credential, e.g., agency login): PGOTTL

POSITION TITLE: Medical Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
State University of New York, Stonybrook NY	BS	09/1970	O6/1974	Biology
Graduate School of City University of New York, NY	PhD	09/1979	06/1984	Biology
The Public Health Research Institute , NYC	Post-doctoral	09/1984	06/1992	Virus assembly

A. Personal Statement

My laboratory has previously focused on the study of the bacterial reoviruses, cystoviruses, in regard to their assembly, replication, and structure. Consequently I have had extensive experience in the study of the assembly of viral particles and virus like particles. My laboratory work with cystoviruses has utilized the techniques of molecular biology and structural studies utilizing electron microscopy. I have decided to add a strong translational aspect to my research program that utilizes and applies my background. The recent research has extensively utilized electron microscopy (EM) techniques that are crucial to current translational research projects in Zika virus, respiratory syncytial virus (RSV) and adenovirus virus and porcine circovirus vaccines (in collaboration with a corporate partner). Our research efforts with these human pathogens are directed to the establishment of recombinant virus-like particles (VLPs) for vaccine use. For example the detailed Zika virus and RSV VLP architecture was reconstructed from single particle cryo-EM and tomographic tilt series images. Similar image reconstructions will be derived for the SARs-CoV-2 VLPs as a confirmation of the proper assembly of immunogenic particles.

B. Positions and Honors

1. 1978 - 1984 Adjunct Lecturer, Microbiology course and Molecular Biology laboratory, Graduate Fellow, Department of Microbiology, Hunter College and Hunter College School of Nursing
2. 1984 - 1992 Research Associate, Department of Microbiology, Public Health Research Institute of the City of New York

3. 1992 – 1993 Research Associate, The Public Health Research Institute Tuberculosis Center, Public Health Research Institute of the City of New York
4. 1993 – 1995 Director of the Viral Analysis Laboratory, Department of Virus Inactivation, The New York Blood Center/Melville Biologics Inc.
5. Senior Research Scientist, Laboratory of Infectious Disease, National Institutes of Health,1995 - 1996
6. 1996 – 1997 Patent Examiner, U.S. Patent and Trademark Office, Group 1800, Biotechnology, Subdivision Virology and Immunology
7. 1997 – 2003, Assistant Professor, CCNY, Sophie Davis School of Biomedical Education, Graduate School, Departments of Biology and Biochemistry
8. 2003 – 2005, Tenured Assistant Professor, CCNY, Sophie Davis School of Biomedical Education, Graduate School, Departments of Biology and Biochemistry
9. 2005 – 2012, Tenured Associate Professor, CCNY, Sophie Davis School of Biomedical Education, Graduate School, Departments of Biology and Biochemistry
10. 2012 – 2016, Tenured Medical Professor, CCNY, Sophie Davis School of Biomedical Education, Graduate School, Departments of Biology and Biochemistry
11. 2016 - present Tenured Medical Professor, City University of New York School of Medicine

C. Contributions to Science

Beginning with my postdoctoral studies at the Public Health Research Institute (PHRI) of New York City I have studied mechanisms of virus assembly. The initial work was entirely focused on the reovirus – like cystovirus φ6, the only member species identified until 1999. The laboratory under the direction of Dr. Leonard Mindich established the first in vitro packaging system for a segmented double-stranded RNA virus and the system facilitated the elucidation of the mechanism for segment selection and replication. The research was expanded with the discovery of additional cystovirus species with extensive investigation of species φ12 at the City College of New York. The entire φ12 genome sequence was determined with comparison to the other species allowing phylogenetic interpretation of the genera. I expanded the research to include structural studies and the unique and complex architecture of the virus surface was determined using electron cryo tomography technology. The structural studies included a close analysis of the cystovirus RNA replication apparatus using projection image reconstructions from cryo-electron microscopy data. The cystovirus model system has proven to be of great utility to other structural virology investigators and has become the focus of study for additional RCMI, NIH, and NSF funded investigators at City College. Recent research as described above has been directed towards utilizing virus assembly methodology towards the production of virus –like particle-based vaccines

Khayat, R, Wen, K, Alimova, A, Gavrilov,B, Katz, A, Galarza, JM **Paul Gottlieb** (2019) Structural characterization of the PCV2d virus-like particle at 3.3 Å resolution reveals differences to PCV2a and PCV2b capsids, a tetranucleotide, and an N-terminus near the icosahedral 3-fold axes

Oliveira LM, Ye Z, Katz A, Alimova A, Wei H, Herman GT, **Gottlieb P**. (2018) Component tree analysis of cystovirus φ6 nucleocapsid Cryo-EM single particle reconstructions.PloS one. ; 13(1):e0188858

Boigard H, Alimova A, Martin GR, Katz A, **Gottlieb P**, Galarza JM. 2017; Zika virus-like particle (VLP) based vaccine. PLoS neglected tropical diseases. 11(5):e0005608.PubMed [journal]PMID: 28481898 PMCID: PMC543689

Complete List of Published Work in my Bibliography
http://www.ncbi.nlm.nih.gov/sites/myncbi/1vkyjb2Jxu9Qs/bibliography/47273136/public/?sort=date&direction=ascending

D. Additional Information: Research Support and/or Scholastic Performance

Current: Subcontract: Department of Defense
Title: TechnoVax, Inc, The goal is to develop a VLP-based adenovirus vaccine for the Department of Defense.
$26,000 12/1/2020 -21 New York, Tarrytown, NY
Role: Co-investigator

Completed: Completed Research Support

NIH SCORE SC1GM092781-01 Gottlieb 6/2010-5/2016
Title: The Molecular Structure of the RNA Polymerase Portal of a Bacteriophage-Reovirus
The goal of this study is to determine the RNA packaging mechanism and precise structure of the cystovirus portal apparatus.
$1,500,000
Role: PI