

## CAROLYN B. MARKS, M.S.

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[www.aecom.yu.edu/iag/cbm.html](http://www.aecom.yu.edu/iag/cbm.html)

**Objective:** Resourceful scientist seeks position on a research team where my expertise in light, confocal, and electron microscopy can efficiently bring the most out of projects. Developing new methods, teaching, assisting and training others welcomed. Contributing to grant applications, attending seminars, meetings, and presenting data at such venues would be ideal.

**Current Professional Responsibilities:** Senior technician in a multi-user core facility offering light and electron imaging solutions for basic medical science researchers. Routinely consult with investigators and customize electron microscopy preparatory techniques to suit imaging needs on a case by case basis. Discuss strengths and weaknesses of different imaging methods as they pertain to specific experiments, including elements of technical difficulty, and cost to the investigator. Training and troubleshooting provided on a diverse group of microscopes, including: upright and inverted light microscopes for brightfield and epifluorescence; confocal microscopy; scanning electron microscopy; and transmission electron microscopy. Also supervise junior technicians, and share in general lab management.

### PROFESSIONAL RESEARCH EXPERIENCE

#### ALBERT EINSTEIN COLLEGE OF MEDICINE, YESHIVA UNIVERSITY, BRONX, NEW YORK

4/01-present **Research Assistant D**, Analytical Imaging Facility (see: [www.aecom.yu.edu/aif](http://www.aecom.yu.edu/aif))  
4/01 Promoted after formal review conducted by dean's office  
2/98-4/01 **Research Assistant C**, Analytical Imaging Facility, a core facility of the Cancer Center

#### PENN STATE, UNIVERSITY PARK, PENNSYLVANIA

8/95-1-98 **Graduate Assistant**, Department of Entomology  
Fall 1997 **Teaching Assistant**, "Animal Behavior" Instructed weekly class group review of literature

#### CASE WESTERN RESERVE UNIVERSITY, CLEVELAND, OHIO

6/94-8/95 **Acting Assistant Director, Electron Microscopy Facility** Department of Neurosciences  
6/92-6/94 **Lab Manager**, Department of Neurosciences  
6/94 Promoted to Next technical level  
7/91-6/92 **Primary lab Assistant**, Departments of Nutrition and Medicine

### PROFESSIONAL RESEARCH SKILLS AND TECHNIQUES

On-line Technical Portfolio: [www.aecom.yu.edu/iag/cbm.html](http://www.aecom.yu.edu/iag/cbm.html)

#### **Transmission Electron Microscopy (TEM)**

- From fresh tissues through publication quality images, over 12 years experience
- Vacuum Evaporation; Rotary Shadowing; CryoUltramicrotomy; Freeze Substitution, Negative Staining
- All traditional black and white photography techniques pertaining to TEM
- Assist and teach the proper operation of JEOL 100CX, 100CXII, and 1200EX TEM's
- Consulting, Teaching, Troubleshooting and Method Development

#### **Scanning Electron Microscopy (SEM)**

- Sample prep techniques for cell cultures, suspensions, *C. elegans*, embryos, biopsies
- Operation and troubleshooting of Critical Point Dryers and Sputter coaters;
- Consult and teach the proper operation of JEOL 6400 SEM with LaB6 or tungsten filament
- Digital SEM image optimization, capture and archival

### **Confocal Microscopy**

- Operation and teaching on BioRad Radiance 2000 Laser Scanning confocal microscope
- Z-series acquisition for 3-D rendering; multiple probes; co-localization

### **Light and Fluorescence Microscopy**

- Proper use and maintenance of light microscopes, digital acquisition stations, upright and inverted
- Advanced methods, such as Time Lapse, and Deconvolution; Phase, DIC, Darkfield
- Preparatory techniques such as cryomicrotomy and staining protocols

### **Computer Operating System Experience**

- Over 12 years experience with Macintosh OS, including Power PC's, G3's, G4's and iMac's
- Over 6 years experience with Windows based computers, 98, ME, and NT
- Responsible for maintaining and administering both Macintosh and PC work stations and their interoperability
- high end peripheral equipment such as Fiji Pictography printer and Agfa 2500 Scanner

### **Image Analysis and Computer software Experience**

- NIH Image; IP Lab; VoxBlast (3-D reconstruction); Bitplane Autoaligner, Imaris, and Surpass
- Adobe PhotoShop, Acrobat Writer; Microsoft Word, Access, PowerPoint

### **Antibody Techniques**

- Immunohistochemistry; Immunosorbant electron microscopy (ISEM); ELISA; Immunoblots

### **Chemistry Techniques**

- Wet Chemistry techniques and bench work; pH meters, Osmometers, Analytical Balances
- Centrifugation, Separation Methods, Sucrose Gradients; UV-visible Spectrophotometry
- High Pressure Liquid Chromatography (HPLC); Atomic Absorption Spectrophotometry (AA)

## **EDUCATION**

### **GRADUATE PROGRAM**

PENN STATE, University Park, Pennsylvania.  
Master of Science in Entomology Received May 2001  
Research Program Area: Cellular and Molecular Mechanisms

#### **MASTER THESIS TITLE**

"Use of Marker Dyes for Aphid Feeding and their Effect on Barley Yellow Dwarf Virus Transmission Plus Virus Binding at Accessory Salivary Gland Basal Lamina with Improved *In Vitro* Method"

#### **SELECTED GRADUATE COURSE WORK**

Molecular Biology and Cell Regulation, Medical Virology, Evolution of Infectious Disease, Molecular Methods, Chemical Ecology, Advanced Insect Physiology, Statistics

#### **GRADUATE ACTIVITIES AND PRESENTATIONS**

Entomology Graduate Student Society, 1995-97; Secretary/Treasurer, 1996-97  
Development of Educational Materials: Digital Microscopy of insect organs and cellular morphology  
Projectionist for Departmental Seminars with Audio and Video recording for Library 1996  
"Some Insights into the Function of Dipteran Halteres" Graduate Research Presentation, Fall 1995  
"Complexities of Electron Microscopy Sample Preparation" Brown Bag Seminar Series, Fall 1995  
"Works in Progress: Selected Research in the Barley Yellow Dwarf Virus -Vector System", Brown Bag Seminar Series, Fall 1997  
Thesis Presentation: "Where did all the Barley Yellow Dwarf Virus go? The effect of dyes and *in vitro* incubation on virus binding" Spring 2001

#### **PUBLIC OUTREACH**

Insect Petting zoo and Information booth at Ag Progress Days, State College PA, Summer 1996  
Insect Zoo "Curator", The Great Insect Fair, PSU University Park Campus, Fall 1996  
Organized Face Painting for The Great Insect Fair, PSU University Park Campus, Fall 1997  
Judge for Pennsylvania Junior Science and Humanities Symposium, Spring 1997

## **UNDER GRADUATE EDUCATION**

BOWLING GREEN STATE UNIVERSITY, Bowling Green, Ohio.  
Bachelor of Science in Biology and Chemistry, 1991

### **CO-OP PROGRAM**

Analytical Chemist, Fusion Inc, Willoughby, OH, Summer and semester breaks 1990-91

### **ACADEMIC HONORS**

Alpha lambda Delta, Freshmen Honors, 1987  
Elected President of Alpha Beta chapter of Beta Beta Beta, 1990-1991  
Pennsylvania Alumni Association Scholarship, Fall 1990  
Deans list, Fall 1989, Spring 1990, Spring 1991

### **SELECTED UNDERGRADUATE COURSE WORK WITH LABS**

Cell Biology, Instrumental Analysis, SEM and TEM, Human Anatomy and Physiology,  
Genetics, Microbiology, Qualitative Analysis, Biochemistry, Organic Chemistry, Physics

## **PROFESSIONAL AFFILIATIONS**

Microscopy Society of America, 1995-present  
New York Society of Experimental Microscopist 1998-present  
Microscopy and Microanalysis Meeting 2002, 2000, 1997  
East Cost Worm Conference, 2002

## **PROFESSIONAL SHORT COURSES**

Digital Imaging, M&M 2000  
Confocal Microscopy, M&M 1997

## **PUBLICATIONS**

Caveolin-1 null mice are viable, but show evidence of hyper-proliferate and vascular abnormalities Babak Razani; J. A. Engelman; X. Bo Wang; W. Schubert; X. Lan Zhan; C. B. Marks; F. Macaluso; R. G. Russell; Maomi Li; R. G. Pestell; D. Di Vizio; H. Hou Jr; B. Knietz; G. Lagaud; G. J. Christ; W. Edelmann; and M. P. Lisanti J Biol Chem 276(41):38121-38138.

Poster presentation : Alae Mutant Defects assessed by SEM and TEM Carolyn B. Marks, Tylon Stephney, Adam Hartley, Min Ren, Hui Feng, Charles Rubin, Dave Hall Microscopy and Microanalysis 2002

## **PAPERS CURRENTLY UNDER SUBMISSION**

Mechanisms of Angiogenesis after Myocardial Infarction and Treatment with Basic Fibroblast Growth Factor Sybill Patan; Armin Helisch; Carolyn B. Marks; J. Anthony Ware. Submitted.

The Effects of feeding Marker Dyes on the Barley Yellow Dwarf Virus System Carolyn B. Marks, Diana Cox-Foster, and Fred E. Gildow *in progress*

In Vitro Incubation of Barley Yellow Dwarf Virus: Effect on Virus Penetration through the Basal Lamina Carolyn B. Marks, Diana Cox-Foster, and Fred E. Gildow *in progress*