

# Mark E. Schmitt

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## *Curriculum Vitae*

## Work:

College of Graduate Studies  
Office of Research Administration  
Department of Biochemistry & Molecular Biology  
1120 Weiskotten Hall  
SUNY Upstate Medical University  
750 East Adams Street, Syracuse, NY 13210  
315.464.4515  
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## Education

- 1981-1985 **Cornell University, Ithaca, NY**  
*Bachelors of Science, Nutritional Biochemistry*
- 1986-1991 **Dartmouth College, Hanover, NH**  
*Ph.D. in Biochemistry*

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## Administrative Experience

- 2018-present **Interim Vice President for Research**  
**Interim Operations Manager for the Research Foundation**  
SUNY Upstate Medical University, Syracuse, New York
- 2013-present **Dean, College of Graduate Studies**  
SUNY Upstate Medical University, Syracuse, New York
- 2016-2018 **Course Director: Gastro Intestinal Unit**
- 2004-2013 **Director: Summer Undergraduate Research Fellowship (SURF) Program**  
SUNY Upstate Medical University, Syracuse, NY
- 2004-2005 & 2006-2008 **Director: Graduate Program in Biochemistry & Molecular Biology**

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## Academic Experience

- 2010-present **Professor: Department of Biochemistry & Molecular Biology**  
Program in Biomedical Sciences  
Program in Structural Biology, Biochemistry & Biophysics  
SUNY Upstate Medical University, Syracuse, New York
- Laboratory Research Interests:**
- Biogenesis and structure of the RNase Mitochondrial RNA Processing (MRP) ribonucleoprotein complex
  - Control of the cell cycle by ribonucleases
  - Mitochondrial RNA import
- 2010-present **Member: Cancer Research Institute**  
SUNY Upstate Medical University, Syracuse, NY
- 2010-2014 **Core Member: Cancer Focus Group**  
International Institute of Biomedical Sciences and Technology  
SUNY Upstate Medical University / National Cheng Kung University / Technion-

Israel Institute of Technology

- 2002-2010 Associate Professor: *Department of Biochemistry and Molecular Biology***  
Program in Biomedical Sciences, Program in Cell & Molecular Biology  
SUNY Upstate Medical University, Syracuse, New York
- 1994-2002 Assistant Professor: *Department of Biochemistry and Molecular Biology***  
Program in Biomedical Sciences, Program in Cell & Molecular Biology  
SUNY Upstate Medical University, Syracuse, New York
- 1990-1994 Postdoctoral Research: *Principal Investigator: Dr. David A. Clayton***  
Department of Developmental Biology, Stanford University, Stanford, CA  
Identification and characterization of the RNase MRP enzyme from *Saccharomyces cerevisiae*.
- 1985-1990 Doctoral Research: *Principal Investigator: Dr. Bernard L. Trumpower***  
Department of Biochemistry, Dartmouth Medical School, Hanover, NH  
Thesis: Biochemical and genetic characterization of subunit six from the *Saccharomyces cerevisiae* cytochrome bc<sub>1</sub> complex.

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### Awards & Honors

- 1985-1986 Dartmouth College Doctoral Fellowship
- 1986-1990 Ryan Foundation Doctoral Fellowship
- 1991-1994 Damon Runyon-Walter Winchell Postdoctoral Fellowship
- 2003 SUNY Upstate, President's Award for Excellence in Research by a Young Investigator
- 2003 American Cancer Society Research Scholar

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### Research Grant Funding

- 02/01/2003 National Institute of General Medical Sciences  
- 01/31/2013 *Control of the cell cycle by mRNA degradation*  
2R01GM63798-09 Total Cost, \$2,290,889
- 07/01/2002 National Institute of General Medical Sciences  
- 06/30/2007 *RNA import into mitochondria*  
5R01GM64634-05 Total Cost, \$946,680
- 07/01/1996 American Cancer Society  
- 06/30/2003 Control of the Cell Cycle by RNase MRP  
RPG-95-109 Total Cost, \$570,000
- 07/01/1998 American Heart Association (New York State)  
- 06/30/2001 *Import of RNA into Mitochondria*  
Total Cost: \$105,000
- 07/01/2006 Milheim Foundation Grant for Cancer Research  
- 07/01/2007 *Role of a Non-coding RNA in Cell Cycle Control and Developmental Disorders in a Mouse Model*  
MFCR 2006-18 Total Costs: \$5,665

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### Related Professional Activities

#### Administrative Development:

SUNY Leadership Academy Alumni Retreat, Summer, 2015

SUNY Executive Leadership Academy, Summer, 2015  
Council of Graduate School New Dean's Boot Camp, Summer, 2014

**Member:**

American Association for the Advancement of Science  
American Society of Biochemistry and Molecular Biology  
Genetics Society of America  
American Society of Microbiology  
The RNA Society  
Council of Graduate Schools  
National Postdoctoral Association

**Study Sections:**

NIH Study Section, ZRG1 F05-Cell Biology Fellowships (2009, 2010, 2011, 2014, 2015)  
NIH Study Section ZRG1 GGG Q, April, 2014  
FAMRI Grant Review Panel, 2007, 2008; ad hoc 2011  
Breast Cancer Research Program Concept Cell Biology Panel, DOD (2005, 2006, 2010)  
Florida DOH Biomedical Research Program (2004, 2005, 2006, 2007, 2009).  
Ovarian Research Program, DOD (2000, 2002, 2004, 2005, 2008)  
Prostate Cancer Research Program, DOD (2004) Ad hoc, Chairman  
Breast Cancer Research Program, DOD (2003, 2004) Ad hoc, Chairman

**Grant Reviewer (ad hoc):**

Children's Miracle Network  
American Cancer Society  
Hendrick's Foundation  
Austrian Science Fund  
The Wellcome Trust  
National Science Foundation  
Isreal Science Foundation  
Medical Research Council (Great Britain)  
Netherlands Organization for Scientific Research (NWO)  
CRDF (U.S. Civilian Research and Development Foundation)  
Kansas City Area Life Science Institute

**Meeting Coordination:**

Northeast Regional Yeast Meeting (NERY), 2007, co-organizer  
Ribo-Club Opening Session, 2006, special session organizer

**Manuscript Reviewer:**

*The Journal of Biological Chemistry*  
*EMBO Journal*  
*Science*  
*Nucleic Acids Research*  
*RNA*  
*Molecular & Cellular Biology*  
*Biotechnology Progress*  
*Gene*  
*Molecular Cell*  
*International Journal of Biochemistry*

*American J. of Human Genetics*  
*Cell and Molecular Life Sciences*  
*Mitochondrion*

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## Teaching Experience

### Lectures:

**Medical:** Heme Metabolism, Amino Acid Metabolism, Urea Cycle, 1-Carbon and Nucleotide Metabolism, Atherosclerosis, Integration of Metabolism

**Graduate:** Analysis of Lipids, Prediction of Protein Structure, The Practice of Science, Genetics, Nitrogen and Lipid Metabolism  
Advanced Yeast Genetics and Molecular Biology  
RNA processing, Cell cycle control, Mitochondrial Genetics, Mobile Elements, Origin of Life, Micro-RNA Control of Gene Expression, Grant Writing, Formulating a Individual Development Plan (IDP), Scientific Writing in Biochemistry

### Small Group Conferences:

Cell and Molecular Biology/Molecular Foundations of Medicine (LDL Receptor, Muscular Dystrophy, Retinoblastoma, Breast Cancer, Serpins)

Biochemistry/Molecular Foundations of Medicine (Clinical Biochemistry, Acid-Base, HIV Protease Inhibitors, Lipids, Human Metabolic Variants, Nitrogen Metabolism and Nutrition)

### Journal Clubs:

Biomedical Sciences

Cell and Molecular Biology

Biochemistry and Molecular Biology

Yeast

### Course Director:

Medical-Phase 1 Unit 7- GI (1st year medical students) 2016-present

Molecular and Cellular Principles (1st year medical students) 2013-2017

Foundations of Biomedical Science (Co-Director) 2003, 2004

Advanced Topics in Biochemistry and Molecular Biology 1999, 2001

Graduate Biochemistry, Cell and Molecular Biology (Co-Director) 1998-2002

Applied Biochemical Techniques 1997

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## Citizenship Duties

### Current Committee Service:

**2010-present** UEC- Upstate Executive Committee

**2013-present** eUEC-Upstate President's Extended Executive Council

**2013-present** College of Medicine Leadership Team

**2013-present** Academic Council

**2018-present** Cancer Center Leadership Council

**2018-present** CNY Biotech Accelerator Advisory Board

**2018-present** Clinical Research Overview Committee, Chair

**2018-present** Veteran Affairs, Deans Committee  
**2018-present** Neuroscience Integration Task Force  
**2018-present** Community Giving Campaign, Co-chair  
**2017-present** Culture of Trust Initiative, *Chair*  
**2017-present** Marketing Task Force  
**2011-present** Biochemistry & Molecular Biology Tenure and Promotions Committee  
**2013-present** Graduate Advisory Committee, *Ex-Officio*  
**2011-present** Upstate Visiting Lecture Scholars Program  
**2013-present** Graduate Admissions Committee, *Ex-Officio*  
**2013-present** Graduate Curriculum Committee, *Ex-Officio*  
**2013-present** MD/PhD Admissions & Advisory Committee  
**2013-present** College of Health Professions, *Medical Biotechnology Advisory Board*  
**2017-present** SUNY Oswego Biomedical Informatics Program, *Scientific Advisory Board*  
**2015-present** Academic Review Board (MD/PhD)  
**2016-present** College of Nursing Tenure and Promotions Committee  
**2017-present** Physician Scientist Residency Task Force  
**2017-present** Research Steering Committee  
**2007-present** Sherbrooke Ribo Club, *Scientific Advisory Board Member*  
**2016-present** Middle States Steering Committee  
**2015-present** Upstate Portrait Committee  
**2017-present** Presidents Effective Leadership Task Force  
**2017-present** SUNY Community of Practice in Applied Learning, *Campus Liaison*  
**2018-present** Microcredentials Committee

**Past Committee Assignments:**

**2018** SUNY Downstate School of Graduate Studies, *External Review Panel*  
**2017-2018** LCME Working Group 1  
**2016-2018** Middle States Working Group 7 Committee, *Co-chair*  
**2017-2018** College of Medicine Policy Committee  
**2015-2018** Medical School Phase 1 Committee  
**2015-2018** Academic Review Board (Year 1-Medicine)  
**2016-2017** Strategic Planning Group  
**2005-2013** Graduate Advisory Committee  
**2005-2008** Graduate Advisory Committee, *Chair*  
**& 2011-2012**  
**2015-2017** SUNY Research Foundation Postdoc Advisory Team  
**2016-2017** Search Committee for the College of Nursing Dean, *Co-Chair*  
**2013-2015** Research Steering Committee, *Ex-Officio*  
**2012-2016** Graduate Mentoring and Career Development Committee, *Chair*  
**2009-2015** SUNY Distinguished Service & Teaching Professorships Committee  
**2007-2015** Upstate Parking Committee  
**2009-2015** Proteomics Core Advisory Committee

**2013-2016** Graduate Rules & Regulations Committee, *Ex-Officio*  
**2013-2016** Graduate Elections Committee, *Ex-Officio*  
**2013-2016** Graduate Recruitment Committee, *Ex-Officio*  
**2004-2013** Summer Undergraduate Research Fellowship (SURF) Program:  
 SUNY Upstate, *Director*  
**1995-1998** First Year Graduate Student Advisory Committee  
*Department of Biochemistry & Molecular Biology*  
**2007- 2009** Middle States Committee on Assessment of Student Learning  
**& 2013-2014**  
**2006-2008** Upstate Faculty Mentoring Program  
**1996-2001** Curriculum Committee, *Program in Cell and Molecular Biology*  
**2000-2004** Curriculum Committee, *Biomedical Sciences Program*  
**1995-1998** Graduate Committee, *Department of Biochemistry & Molecular Biology*  
**& 2004-2012**  
**2004-2005** Graduate Committee, *Department of Biochemistry & Molecular Biology, Chair*  
**& 2006-2008**  
**1995-1996** Faculty Search Committee, *Department of Biochemistry & Molecular Biology*  
**1999-2000**  
**2002-2004**  
**& 2006-2007**  
**2004** Faculty Search Committee, *Department of Biochemistry & Molecular Biology, Chair*  
**2011-2012** Graduate Mentoring Task Force  
**2002-2007** MD/PhD Admissions Committee  
**2002-2005** SB3 Admissions Committee  
**2004-2006** Committee for the President's Award for Excellence in Research  
**2007** President's Engaging Excellence Student Team  
**2008-2010** Engaging Excellence Student Implementation Team  
**2004** Chairperson Search Committee  
*Department of Cell and Developmental Biology*  
**2011-2012** Curriculum Dean Search Committee  
**03-06/1998** Jennifer Smith, *Rotation Student (Ph.D.)*  
**03-06/1997** Hui Jin, *Rotation Student (Ph.D.)*  
**03-06/1995** Scott Glowgowski, *Rotation Student (M.S.)*  
**01-03/1996** Susan Keezer, *Rotation Student (Ph.D.)*  
**09-12/1996** Zhijing Zhou, *Rotation Student (M.S.)*

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## Publications (in reverse chronological order)

Salinas, K, S. Wierzbicki, V.G. Khomenkov and M. E. Schmitt. 2018. Rmp1 interacts with its own mRNA and with the RNA and Smn1 components of the *Saccharomyces cerevisiae* RNase MRP. In preparation.

Aulds, J., M. D. Shafiuddin, K. Salinas and M. E. Schmitt. 2018. Systematic genetic analysis of RNase MRP mutants reveals roles in multiple cellular functions. In preparation.

Lu, Q., S. Wierzbicki and M. E. Schmitt. 2018. The RNase MRP RNA is critical for early development in the mouse. In preparation.

Aulds, J, S. Wierzbicki, A. McNairn and M. E. Schmitt. 2012. Global identification of new substrates for the yeast endoribonuclease, RNase mitochondrial RNA processing (MRP). *J. Biol. Chem.* **287**: 37089-37097.

Jaag, H. M., Q. Lu, M. E. Schmitt and P. D. Nagy. 2011. The role of Ribonuclease MRP in viral RNA degradation and RNA recombination. *J. Virol.* **85**:243-254.

Lu, Q., S. Wierzbicki, A. S. Krasilnikov and M. E. Schmitt. 2010. Comparison of mitochondrial and nucleolar RNase MRP reveals identical RNA components with distinct enzymatic activities and protein components. *RNA*, **16**: 529-537.

Esakova, O., A. Perederina, C. Quan, M. E. Schmitt and A. S. Krasilnikov. 2008. Footprinting analysis demonstrates extensive similarity between eukaryotic RNase P and RNase MRP holoenzymes. *RNA*, **14**:1558-1567.

Perederina, A., O. Esakova, M. E. Schmitt and A. S. Krasilnikov. 2007. Specific binding of a Pop6/Pop7 heterodimer to the P3 stem of the yeast RNase MRP and RNase P RNAs. *RNA*, **13**:1648-1655.

Gill, T., J. Aulds and M. E. Schmitt. 2006. A specialized processing body that is temporally and asymmetrically regulated during the cell cycle in *Saccharomyces cerevisiae*. *J Cell Biol.* **173**: 35-45.

Hermanns, P., A. A. Bertuch, T.K. Bertin, B. Dawson, M. E. Schmitt, C. Shaw, B. Zabel, and B. Lee. 2005. Consequences of mutations in the non-coding *RMRP* RNA in Cartilage Hair Hypoplasia. *Hum. Mol. Genet.* **14**: 3723-3740.

Thiel, C. T., D. Horn, B. Zabel, A. B. Ekici, K. Salinas, E. Gebhart, F. Rüschemdorf, H. Sticht, J. Spranger, D. Müller, C. Zweier, M. E. Schmitt, A. Reis and A. Rauch. 2005. Severely incapacitating mutations in patients with extreme short stature identify RNA processing endoribonuclease *RMRP* as an essential cell growth regulator. *Am. J. Hum. Genet.*, **77**:795-806.

Salinas, K, S. Wierzbicki, L. Zhou and M. E. Schmitt. 2005. Characterization and Purification of *Saccharomyces cerevisiae* RNase MRP Reveals a New Unique Protein Component. *J. Biol. Chem.* **280**: 11352-11360.

Narale, G., J. Beaumont, P. A. Rice and M. E. Schmitt. 2004. Computational identification of RNA motifs in genome sequences. In *Lecture Notes in Computer Science*, p. 138-143, Springer-Verlag, Heidelberg.

- Gill, T., T. Cai, J. Aulds, S. Wierzbicki, and M. E. Schmitt. 2004. RNase MRP cleaves the CLB2 mRNA to promote cell cycle progression: a novel method of mRNA degradation. *Mol. Cell. Biol.* **24**: 945-953.
- Aulds, J., T. Cai and M. E. Schmitt. 2002. RNase MRP from yeast to humans, cell cycle control and Cartilage Hair Hypoplasia. *Recent Res. Devel. Mol. Cell. Biol.* **3**: 371-378.
- Schmitt M. E. 2002. Misdiagnosis. *Modern Drug Discover*, **5** (7) :9.
- Cai, T., J. Auld, T. Gill, M. Cerio and, M. E. Schmitt. 2002. The *Saccharomyces cerevisiae* RNase Mitochondrial RNA Processing is critical for cell cycle progression at the end of mitosis. *Genetics*, **161**: 1092-1042.
- Cai, T. and M. E. Schmitt. 2001. Characterization of RNase MRP function. *Meth. Enzy.* **342**: 135-142.
- Meyer, J. W. and M. E. Schmitt. 2000. A central role for NADPH oxidase in the atherosclerotic endothelium. *FEBS Letters*, **472**:1-4.
- Shadel G. S., G. A. Buckenmeyer, D. A. Clayton, and M. E. Schmitt. 2000. Mutational analysis of the RNA component of *Saccharomyces cerevisiae* endoribonuclease MRP reveals distinct nuclear phenotypes. *Gene*, **245**:175-184.
- Meyer J. W., J. A. Holland, L. M. Ziegler, M. Chang, G. Beebe, and M. E. Schmitt. 1999. Identification of a functional leukocyte-type NADPH oxidase in human endothelial cells: A potential atherogenic source of reactive oxygen species. *Endothelium*, **7**: 11-22.
- Cai, T., T. R. Reilly, M. E. Cerio and M. E. Schmitt. 1999. Mutagenesis of *SNM1*, which encodes a protein component of the yeast RNase MRP, reveals a role for this ribonucleoprotein endoribonuclease in plasmid segregation. *Mol. Cell. Biol.* **19**:7857-7869.
- Schmitt M. E. 1999. Molecular modeling of the three-dimensional architecture of the RNA component of yeast RNase MRP. *J. Mol. Biol.* **292**:827-836.
- Holland, J. A., J. W. Meyer, M. E. Schmitt, M. D. Sauro, D. K. Johnson, R. W. Abdul-Karim, V. Patel, L. M. Zeigler, K. J. Schillinger, R. F. Small, and L. F. Lemanski. 1997. Low-density lipoprotein stimulated peroxide production and endocytosis in cultured human endothelial cells: mechanism of action. *Endothelium* **5**:191-207.
- Reilly T. R. and M. E. Schmitt. 1996. The yeast, *Saccharomyces cerevisiae*, RNase P/ MRP ribonucleoprotein endoribonuclease family. *Mol. Biol. Reports* **22**:87-93.
- Tron, T., M. Yang, F.A. Dick, M. E. Schmitt, and B. L. Trumpower. 1995. A yeast gene corresponding to a gene which is differentially expressed in Wilm's tumor, has a genetic relationship to a regulatory protein of the mitochondrial cytochrome bc<sub>1</sub> complex. *J. Biol. Chem.* **270**:9961-9970.
- M. E. Schmitt. and D. A. Clayton. 1994. Characterization of a unique protein component of the yeast RNase MRP: an RNA-binding protein with a zinc-cluster domain. *Genes & Devel.* **8**:2617-2628.



- Schmitt M. E. and D. A. Clayton. 1993. Conserved features of yeast and mammalian mitochondrial DNA replication. *Curr. Opin. Genet. & Devel.* **3**:769-774.
- Schmitt M. E. and D. A. Clayton. 1993. Nuclear RNase MRP is required for correct processing of pre-5.8S rRNA in *Saccharomyces cerevisiae*. *Mol. Cell. Biol.* **13**:7935-7941.
- Schmitt M. E., J. L. Bennett, D. J. Dairaghi, and D. A. Clayton. 1993. Secondary structure of RNase MRP RNA as predicted by phylogenetic comparison. *FASEB J.* **7**:208-213.
- Schmitt M. E. and D. A. Clayton. 1992. Yeast site-specific ribonucleoprotein endoribonuclease MRP contains an RNA component homologous to mammalian RNase MRP RNA and essential for cell viability. *Genes & Devel.* **6**:1975-1985.
- Schmitt M. E. and B. L. Trumpower. 1991. The petite phenotype resulting from a truncated copy of subunit 6 results from loss of assembly of the cytochrome bc<sub>1</sub> complex and can be suppressed by overexpression of subunit 9. *J. Biol. Chem.* **266**:14958-14963.
- Schmitt M. E. and B. L. Trumpower. 1990. Subunit 6 regulates half-of-the-sites reactivity of the dimeric cytochrome bc<sub>1</sub> complex in *Saccharomyces cerevisiae*. *J. Biol. Chem.* **265**: 17005-17011.
- Phillips, J. D., M. E. Schmitt, T. A. Brown, J. D. Beckmann, and B. L. Trumpower. 1990. Isolation and characterization of QCR9, a nuclear gene encoding the 7.3 kDa subunit 9 of the *Saccharomyces cerevisiae* ubiquinol-cytochrome c oxidoreductase complex. An intron-containing gene with a conserved sequence occurring in the intron of COX4. *J. Biol. Chem.* **265**:20813-20821.
- Schmitt M. E., T. A. Brown, and B. L. Trumpower. 1990. A rapid and simple method for preparation of RNA from *Saccharomyces cerevisiae*. *Nucleic Acids Res.* **18**:3091-3092.
- Schmitt M. E., J. D. Phillips, and B. L. Trumpower. 1990. Genetic controls of mitochondrial development and function. Genetic analysis of subunits 6 and 9 of yeast ubiquinol-cytochrome c oxidoreductase complex. *Biochem. Biophys. Acta* **1018**:119-123.
- Schmitt M. E. 1990. Biochemical and genetic characterization of subunit six from the *Saccharomyces cerevisiae* cytochrome bc<sub>1</sub> complex. Ph.D. thesis, Dartmouth College, Hanover, N.H.
- Schmitt M. E. and B. L. Trumpower. 1987. A calmodulin-like protein in the cytochrome bc<sub>1</sub> complex required for synthesis of both cytochrome bc<sub>1</sub> and cytochrome c oxidase complexes in yeast mitochondria. In *Cytochrome Systems: Molecular Biology and Bioenergetics* (Papa, S., Chance, B. and Ernster, L., eds) Plenum, New York, p 177-187.