

Curriculum Vitae of Thayumanasamy Somasundaram, Ph.D

April 2015

General Information

Institute of Molecular Biophysics, Room 414
Florida State University
Tallahassee, Florida 32306-4380
Phone: 850-644-6448; Fax: 850-644-7244
E-mail: tsomasundaram@fsu.edu
URL: <http://www.biophysics.fsu.edu/soma>

Professional Preparation

1987 Doctor of Philosophy (Ph.D), Indian Institute of Science, Bangalore, India.
Major: Chemistry. Physical Chemistry. Supervisor: P. Ganguly. Thesis Date
and Title: *1987, Experimental studies on gas-microphone detected photo-
acoustic signals from condensed phases*, Indian Institute of Science,
Bangalore 560 012, India.

Non-degree Education and Training

1989–1993 Research Asst. Professor, Physics Department, Boston University, Boston,
MA 02215, USA

1987–1989 Post-doctoral fellowship, Center for Cellular & Molecular Biology,
Hyderabad, India

Professional Experience

2014–present Senior Research Associate, Institute of Molecular Biophysics, Florida State
University, Tallahassee, FL, USA

2008–2014 Research Associate, Institute of Molecular Biophysics, Florida State
University, Tallahassee, FL, USA

2002–2008 Associate in Research, Institute of Molecular Biophysics, Florida State
University, Tallahassee, FL, USA

1993–2002 Assistance in Research, Institute of Molecular Biophysics, Florida State
University, Tallahassee, FL, USA

Publications

Journals and Book Articles

- 32.'[The structure of lombricine kinase: implications for phosphagen kinase conformational changes](#)', D .J. Bush, O. Kirillova, S.A. Clark, O. Davulcu, F. Fabiola, Q. Xie, **Thayumanasamy Somasundaram**, W.R. Ellington, and M.S. Chapman. *J. Biol Chem.* M110 .202796, (2011). [[DOI Link](#)]
- 31.'[De-icing: Recovery of Diffraction Intensities in the presence of Ice Rings](#)', Michael Chapman and **Thayumanasamy Somasundaram**. *Acta Cryst.* **D66**, 741-744 (2010). [[DOI Link](#)]
- 30.' [Spackling the crack: stabilizing human fibroblast growth factor-1 by targeting the N- and c- terminus \$\beta\$ -strand interactions](#)' Vikash Kumar Dubey , Jihun Lee, **T. Somasundaram**, Sachiko Blaber, and M. Blaber. *J. Mol. Biol.* **371(1)**, 256-268 (2007). [[DOI Link](#)]
- 29.' [Conversion of type I 4:6 to 3:5 \$\beta\$ -turn types in human acidic fibroblast growth factor](#) ', Jihun Lee, Vikash Kumar Dubey, **T. Somasundaram**, and M. Blaber. *Proteins: Structure, Function, and Bioinformatics* **62(3)**, 686-697 (2006). [[DOI Link](#)]
- 28.' [An atomic resolution structure for human fibroblast growth factor 1](#) ', Matthew J. Bernett, **T. Somasundaram**, and M. Blaber. *Proteins: Structure, Function, and Bioinformatics* **57(3)**, 626-634 (2004). [[DOI Link](#)]
- 27.' [The putative catalytic bases have, at most, an accessory role in the mechanism of arginine kinase](#) ', P.S. Pruetz, A. Azzi, S.A. Clark, M.S. Yousef, J.L. Gattis, **T. Somasundaram**, W.R. Ellington and M. S. Chapman. *J Biol Chem* **278(29)**, 26952-57 (2003). [[DOI Link](#)]
- 26.' [Structure determination of adeno-associated virus 2: three complete virus particles per asymmetric unit](#) ', Q. Xie, **T. Somasundaram** , S. Bhatia, W. Bu and M. S. Chapman. *Acta Cryst* **D59(6)**, 959-970 (2003). [[DOI Link](#)]
- 25.' [Induced fit in guanidino kinases-Comparison of substrate-free and transition state analog structures of arginine kinase](#) ', M.S. Yousef, S. A. Clark, P. K. Pruetz, **T. Somasundaram** , W. R. Ellington and M. S. Chapman. *Protein Sci* **12(1)**, 103-111 (2003). [[DOI Link](#)]
- 24.' [Refinement of the arginine kinase transition-state analogue complex at 1.2 Å resolution: mechanistic insights](#) ', M.S. Yousef, F. Fabiola, J.L. Gattis, **T. Somasundaram** , and M. S. Chapman. *Acta Cryst* **D58 (12)**, 2009-2017 (2002). [[DOI Link](#)]

- 23.' [The atomic structure of adeno-associated virus \(AAV-2\), a vector for human gene therapy](#)', Q. Xie, W. Bu, S. Bhatia, J. Hare, **T. Somasundaram**, A. Azzi, and M. S. Chapman. *Proc Natl Acad Sci (USA)* **99 (16)**, 10405-10410 (2002). [[DOI Link](#)]
- 22.' [Polylysine induces an antiparallel actin dimer that nucleates filament assembly: Crystal Structure at 3.5-Å resolution](#)', M.R. Bubb, L. Govindasamy, E.G. Yarmola, S.M. Vorobiev, S.C. Almo, **T. Somasundaram**, M.S. Chapman, M. Agbandje-McKenna, and R. McKenna. *J Biol Chem* **277 (23)**, 20999-21006 (2002); PIP M201371200 April 3, 2002. [[DOI Link](#)]
- 21.' [Actin-latrunculin A structure and function](#)', E. G. Yarmola, **T. Somasundaram**, T. A. Boring, I. Spector, and M. R. Bubb, *J Biol Chem* **275(36)**, 28120-28127 (2000). [[DOI Link](#)]
- 20.' [Critical initial real-space refinement in the structure determination of arginine kinase](#)', G. Zhou, **T. Somasundaram**, E. Blanc, Z. Chen, and M. S. Chapman, *Acta Cryst D* **55 (4)**, 835-845 (1999). [[DOI Link](#)]
- 19.' [Transition State Structure of Arginine Kinase: Implications for catalysis of bimolecular reactions](#)', G. Zhou, **T. Somasundaram**, E. Blanc, G. Parthasarathy, W. R. Ellington, and M. S. Chapman, *Proc Natl Acad Sci(USA)* **95 (15)**, 8449-8454 (1998).
- 18.' [Expression, Purification from Inclusion Bodies, and Crystal Characterization of a Transition State Analog Complex of Arginine Kinase: a Model for Studying Phosphagen Kinases](#)', G. Zhou, G. Parthasarathy, **T. Somasundaram**, A. Ables, L. Roy, S. J. Strong, W. R. Ellington, and M. S. Chapman, *Prot Sci* **6**, 444-449 (1997).
- 17.' [Methane-induced hemolysis of human erythrocytes](#)', H. F. Batliwala, **T. Somasundaram**, E. E. Uzgiris, and L. Makowski, *Biochem J* **307**, 433-438 (1995).
- 16.' [Optical cell for the study of biological systems under high gas pressures](#)', **T. Somasundaram**, and L. Makowski, *Rev Sci Instrum* **66**, 3311-3316 (1995). [[DOI Link](#)]
- 15.' [Binding site conformation dictates the color of the dye stains-all](#)', Y. Sharma, Ch. M. Rao, S. C. Rao, A. G. Krishna, **T. Somasundaram**, and D. Balasubramanian, *J Biol Chem* **264**, 20923-20927 (1989).
- 14.' [Calcium ion binding to d- and b-crystallins](#)', Y. Sharma, Ch. M. Rao, M. L. Narasu, S. C. Rao, **T. Somasundaram**, A. Gopalakrishna, and D. Balasubramanian, *J Biol Chem* **264**, 12794-12799 (1989).
- 13.' [The importance of an adsorbed liquid layer for the enhancement of photoacoustic signals](#)', P. Ganguly and **T. Somasundaram**, in " *Photoacoustic and photothermal phenomena*", Eds. P. Hess and J. Pelzl, Springer Series in Optical Sciences, v. 58, pp. 316-320, Springer-Verlag, Berlin, 1988.

12. ['Influence of flowing gases on the amplitude of gas-microphone detected photoacoustic signals from porous and nonporous solids'](#), P. Ganguly and **T. Somasundaram**, in " *Photoacoustic and photothermal phenomena* ", Eds. P. Hess and J. Pelzl, Springer Series in Optical Sciences, v. 58, pp. 333-334, Springer-Verlag, Berlin, 1988.
11. ['In situ photoacoustic spectroscopic studies of heterogeneous catalysts under conditions of gas flow'](#), **T. Somasundaram** and P. Ganguly, *Bull Mater Sci* **9**, 81-87 (1987).
10. ['Experiments with flowing gases in an open photoacoustic cell'](#), P. Ganguly and **T. Somasundaram**, *Proc Indian Acad Sci (Chem Sci)* **98**, 305-309 (1987).
9. ['Quantitative estimation of substances spotted on filter paper by photoacoustic spectroscopy'](#), **T. Somasundaram**, S.S.R. Rao, and P. Ganguly, *Proc Indian Acad Sci (Chem Sci)* **98**, 171-176 (1987).
8. ['Determination of acidities of zeolites by photoacoustic spectroscopy'](#), **T. Somasundaram**, P. Ganguly, and C.N.R. Rao, *Zeolites* **7**, 404-407 (1987).
7. ['Studies on the enhancement of photoacoustic signals from non-porous solids in presence of volatile liquids'](#), P. Ganguly and **T. Somasundaram**, *Appl Phys* **B43**, 43-52 (1987).
6. ['Photoacoustic investigation of phase transition in solids'](#), **T. Somasundaram**, P. Ganguly, and C.N. R. Rao, *J Phys C: Solid State Phys* **19**, 2137-2151 (1986). [[DOI Link](#)]
5. 'Investigation of solids and surfaces by photoacoustic spectroscopy', C.N.R. Rao, P. Ganguly, and **T. Somasundaram**, *J Indian Chem Soc* **63**, 1-9 (1986).
4. ['Enhancement of photoacoustic signals from condensed materials in the presence of volatile liquids: Influence of optical absorption coefficient, particle size, length of gas phase, and chopping frequency'](#), **T. Somasundaram** and P. Ganguly, *J Appl Phys* **57**, 5043-5047 (1985). [[DOI Link](#)]
3. ['Influence of adsorbed vapors on the photoacoustic spectra of liquids'](#), **T. Somasundaram** and P. Ganguly, *J Colloid Interface Sci* **101**, 579-582 (1984). [[DOI Link](#)]
2. ['A novel technique for enhancing photoacoustic signals from solids'](#), P. Ganguly and **T. Somasundaram**, *Appl Phys Lett* **43**, 160-162 (1983). [[DOI Link](#)]
1. ['Photoacoustic spectra of As₂S₃-As₂Se₃ glasses'](#), **T. Somasundaram**, P. Ganguly, and K.J. Rao, *Proc Indian Acad Sci (Chem Sci)* **92**, 65-71 (1983).

Invited Talks

3. '[FSU's IMB Core Facilities and their capabilities](#)', **T. Somasundaram**. 2014 First Florida Core Network Event, UF-ICBR, Gainesville, Florida.
2. '[Effective Communication in the world of Shared Resources](#)', **T. Somasundaram**. 2013 First Annual Southeastern Association of Shared Resources, UGA, Athens, Georgia.
1. '[Cryo Crystallography at Synchrotrons](#)' **T. Somasundaram**, 2007 Florida Chapter of AVS Science and Technology Society and FSM, UCF, Orlando, Florida,

Symposium/Posters

13. IMB XRF-Core Facility, T. Somasundaram, 2015 Fifth Annual Life Science Symposium: Ageing, Tallahassee, FL. Feb 19-20, 2015.
12. '[FSU's IMB Core Facilities](#)', C. Mundoma, J. Hare and **T. Somasundaram**. 2014 First Florida Core Network Event, ICBR-UF, Gainesville, FL, Aug 15, 2014.
11. '[FSU Core Facilities: Biophysical Cores](#)', D. Sousa, B. Chen, C. Mundoma, and **T. Somasundaram**. 2014 Fourth Annual Life Sciences Symposium: Frontiers in Biomolecular Communication, Tallahassee, FL, Feb 13-14, 2014.
10. 'Development of a vascular injury therapeutic agent', E. Artikis, W. Johnson, T. Somasundaram, and E. Bienkiewicz, 8th Annual Research Fair, College of Medicine, FSU, Tallahassee, FL. Feb 14, 2012.
9. '[Structure determination of Adeno-associated virus 2 in P1 cell with three complete virus particles.](#)', Q. Xie, **T. Somasundaram**, S. Bhatia, W. Bu, M. S. Chapman. 2003 Annual American Crystallographic Association Meeting, Covington, KY.
8. '[Classical enzymology at atomic resolution – Substrate alignment and induced fit](#)', M. S. Chapman, M. Yousef, S. A. Clark, P. Pruet, A. Azzi, J. Gattis, F. Fabiola, **T. Somasundaram**, and W. R. Ellington. 2002 IUCr XIX Congress, Geneva, Switzerland.
7. '[Structure of an anti-parallel action dimer](#)', C. Banchs, M. Bubb, L. Govindasamy, E. Yarmola, **T. Somasundaram**, M. Chapman, S. Vorobiev, S. Almo, M.A-McKenna, R. McKenna. 2002 Annual American Crystallographic Association Meeting, San Antonio, Texas.
6. '[X-ray structure of apo-2,5-di-keto-D-gluconic acid reductase](#)', G. Sanli, **T. Somasundaram**, M. Blaber, 45th Biophysical Society Meeting, Feb. 17-21, 2001, Boston, MA. 257- Poster, B# 113 (2001).

5. '[Catalysis in arginine kinase investigated through structure, mutagenesis, and kinetics](#)', P. Pruetz, A. Azzi, J. G. Gattis, **T. Somasundaram**, W.R. Ellington, M.S. Chapman, ACA 2000 Annual Meeting. Abstract # W0078 (2000).
4. '[Orbital Steering and Entropy: A Bimolecular Phosphoryl Transferase Transition State Analog at 1.8 Å Resolution](#)', J. L. Gattis, G. Zhou, P. S. Pruetz, **T. Somasundaram**, W. R. Ellington, M. S. Chapman, ACA 1999 Annual Meeting. **S0207**, Abstract # W0120 (1999).
3. '[Transition state structure of arginine kinase: Implications for catalysis of biomolecular reactions](#)', M. S. Chapman, S. Chapman, G. Zhou, **T. Somasundaram**, E. Blanc, G. D. Parthasarathy, and W. R. Ellington. 1998 American Crystallographic Society Meeting, Arlington, VA. Abstract E0090 (1998).
2. '[The effect of small hydrophobic gas molecules on detergent-induced hemolysis](#)', H. Batliwala, **T. Somasundaram**, E. Uzgiris, and L. Makowski, 36th Annual Biophysical Society Meeting, Houston, TX, 1992. Biophys. J. **61**, A79 #457 (1992).
1. 'A novel technique for the enhancement of photoacoustic signal', **T. Somasundaram** and P. Ganguly, Third International conference on photoacoustic and photothermal spectroscopy, Paris, 1993. J Phys Colloq **44**, C6: 239-242 (1983).

Internal and External Grants

- Key Personnel, *A small angle X-ray scattering spectrometer for biophysical and soft matter research*, EIEG Funding, FSU Research Foundation, 2006 [\$66,000]
- Co-PI, *Critical Enhancements to the macromolecular X-Ray Facility*, EIEG Funding, FSU Research Foundation, 2007 [\$49,500]
- Co-PI, *Acquisition of Rigaku Automated Detector and X-Ray Generator System*, EIEG Funding, FSU Research Foundation, 2010 [\$44,000]
- Co-PI, *Crystallization Robot for X-Ray Crystallography Facility*, EIEG Funding, FSU Research Foundation, 2014 [\$49,000]

Professional Service

Mentor, Young Scholars Program of Department of Biological Science, FSU (2007-present)

Judge, Capital Regional Science & Engineering Fair, Feb 13, 2015

Safety Coordinator, Student safety training with FSU Safety Office, (2008-present)

Communication member, FSU-Wide Core Facility Managers Network (2012-present)

Member, Specialized Faculty Promotion Committee (2015)

Grant Reviewer, Structural Biology Center, APS Beamline Renewal, Department of Energy (2015)

Community Service

Chairman, Asian Coalition of Tallahassee, a 501 (c) (3) is an umbrella organization of dozen associations and groups, Asian Coalition of Tallahassee (2013-present). Director of Communications (2007-1010) and Chair-Elect (2011-13).

Trustee (2012-13), President (2010-11), General Secretary (2008-09), Web Master (2007-11) of a 501 (c) (3) organization representing over 250 families of Asian Indians, Indian Association of Tallahassee (2012-2013).

Member, Tallahassee Human Relations Council (2014- Present)

Faculty Advisor, Hindu Students Association, FSU Recognized Student Organizations (2014-Present)

Faculty Advisor, Health Educated Asian Leaders, FSU Recognized Student Organizations (2014-Present)

Updated: April 2015