

CURRICULUM VITAE

Name: Ashok B. Kulkarni, PhD

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Education:

1965-1969 BS, Fergusson College, Poona University, India
1969-1971 MS, M.S. University, Baroda, India
1971-1981 PhD, Haffkine Institute, Bombay and M. S. University, Baroda, India
(Thesis: Brain acetylcholine metabolism in malnourished rats)

Brief Chronology of Employment:

1976-1982 Scientific Officer, Biochemistry Department, Haffkine Institute, Bombay, India
1982-1987 Postdoctoral Fellow, Dr. Philip Feigelson's laboratory, Department of Biochemistry, College of Physicians and Surgeons, Columbia University, New York, NY.
1987-1995 Senior Staff Fellow, Developmental and Metabolic Neurology Branch, NINDS, NIH, Bethesda, MD
1995-present Chief, Functional Genomics Section, LCDB, and Manager, Gene Targeting Facility, National Institute of Dental and Craniofacial Research (NIDCR), NIH, Bethesda, MD

Membership and Activity in Professional Societies:

American Association of Dental Research
International Association of Dental Research
Society for Neuroscience

Honors and Awards:

Henry Christian Award, American Federation for Clinical Research and Merck Foundation, Washington, D.C., 1993
NIDR Award for Outstanding Contributions to the Programs and Objectives of NIDR, NIH, 1998
NIH Award in recognition of 10 years of service to NIH, 1998
NIH, NCRR in recognition of contributions to the Scientific and Technical Review Board on Biomedical and Behavioral Research Facilities, 1999
NIH, NIDCR EEO Diversity Special Achievement Award, 2004
Patent and Trade Office, Department of Commerce, in recognition of a review of transgenic technology, 2005
NIH Award in recognition of 20 years of service to NIH, 2007

Editorial Responsibilities:

Member of the Editorial Board:

2004-Present: Journal of Dental Research

Ad hoc Reviewer for Scientific Journals:

BBRC

Bioessays

Biotechnology Journal

Cytokine

DNA and Cell Biology

Drug Metabolism

FASEB Journal

Hepatology

J. Biological Chemistry

J. Contemporary Dental Practice

Journal of Dental Research

Journal of Immunology

Journal of Leukocyte Biology

Journal of Neurochemistry

Journal of Neuroscience

Immunology

Kidney International

Matrix Biology

Nature Genetics

Neuroscience

Neuroscience Letters

The Proceedings of the National Academy of Sciences, USA

Intramural Activities:

1995-Present Manager, Gene Targeting Facility, NIDCR-DIR

1996-1999 Science and Technology Review Board on Biomedical and Behavioral Research Facilities, NCCR, NIH

1994-1997 Supervisor, Howard Hughes Medical Institute (HHMI) Summer Intern

1995-present Mentor for Summer Interns from numerous dental medical, undergraduate and high schools

1997 Search Committee, Staff Scientist Position in OIIB, NIDCR

1997-present NIDCR Animal Care Unit Oversight Committee

1997-2004 NIDCR Cellular Imaging Core Oversight Committee

1997-1998 NIDCR Animal Care and Use Committee

1998-2003 Trans-NIH Mouse Genetics Priorities Settings Committee

1998-2003 Trans-NIH Rat Repository Committee

1998 Search Committee, Staff Scientist Position in OIIB, NIDCR

1999	Search Committee, Staff Scientist Position in OPCB, NIDCR
1999-2004	Chairman, NIDCR Animal Care and Use Committee
1999-2004	Member, NIH ARAC Committee
1999-2003	Trans-NIH Non-mammalian Genome Initiative Committee
1999-2002	NIH Vivarium Planning Committee
2003-present	Member of NIH ECM Club
2003-present	Member of NIH Mouse Club
2005-present	NIH FARE Abstract Review Committee
2006	Hosted hands-on workshop for students of Advanced Biotechnology Institute
2007	NIDCR Search Committee for Animal Program Director

Extramural Activities:

Austrian Science Fund- Grant Reviewer
 NCR C-06 AND G-20 Core Grants Reviewer
 NIST Advanced Technology Program- Grant Reviewer
 Sick Children's Hospital, Toronto, Canada- Grant Reviewer
 Veteran's Administration Hospital Fund- Grant Reviewer
 US PTO Seminar Series- Speaker
 Wellcome Trust- Grant Reviewer

Patents and Invention Reports:

1993 NIH Invention report on TGF- β 1 knockout mouse model.
 1997 NIH Invention report on Cdk5 knockout mouse model.
 1997 NIH Invention report on Fabry disease mouse model.
 1998 NIH Invention report on Cdk5 "floxed" mice.
 1999 NIH Invention report on Cdk5 X NH-H-Cre conditional KO mice.
 2000 NIH Invention report on Amelogenin KO mice.
 2001 NIH Invention report on DSPP-TGF- β 1, DSPP-Cre and DSPP KO mice.
 2002 NIH Invention report on Δ TGF- β 1 mice.
 2003 NIH Invention report on TGF- β RI COKO mice for retinal detachment.
 2004 NIH Invention report on TGF- β RI COKO mice for squamous cell carcinoma.
 2005 NIH Invention Report on role of Cdk5 in pain signaling
 2007 NIH Invention Report on TRPV1 phosphorylation by Cdk5

Material Transfer Agreements:

Provided Tooth Disease Mouse Models & Reagents:

Cornell University, New York, NY
 State University of New York, Buffalo, NY
 The Jackson Laboratory, Bar Harbor, ME
 Tohoku University, Sendai, Japan
 Universite de Lyon, Lyon Cedex, France

University of Alabama, Birmingham, AL
University of California, San Francisco, CA
University of Illinois, Chicago, IL
University of Michigan, Ann Arbor, MI
University of Missouri-Kansas City, Kansas City, MO
University of Texas Health Science Center at San Antonio, San Antonio, TX
University of Texas Health Science Center at Houston, Houston, TX
University of South California School of Dentistry, Los Angeles, CA
University Pennsylvania, Philadelphia, PA

Provided Cdk5/p35 Mouse Models & Reagents:

Asahikawa Medical College, Hokkaido, Japan
Biotechnology Research Institute, Hon Kong
Brigham and Women's Hospital, Boston, MA
Case Western Reserve University, Cleveland, OH
Ottawa Hospital Research Institute, Ottawa, Canada
University of Brussels, Belgium
University of Calgary, Canada
University of Rochester School of Medicine & Dentistry, Rochester, NY
University of California, La Jolla, CA
University of Tokyo, Tokyo, Japan
St. Jude Children's Research Hospital, Memphis, TN
The Case Western University, Cleveland, OH
The Jackson Laboratory, Bar Harbor, ME
The Johns Hopkins University School of Medicine, Baltimore, MD
The RIKEN- BSI, Tokyo, Japan
The Rockefeller University, New York, NY
Thomas Jefferson University, Philadelphia, PA
Yale University School of Medicine & Howard Hughes Medical Institute, New Haven, CT;

Provided Fabry Mouse Model:

OSIRIS Therapeutics, Inc., Baltimore, MD (licensed)
La Jolla Institute for Allergy and Immunology, San Diego, CA
Princeton University, Princeton, NJ
Royal Free Hospital School of Medicine, London, UK
The RIKEN-Brain Science Institute, Tokyo, Japan
The Jackson Laboratory, Bar Harbor, ME
Tokyo Metropolitan University, Tokyo, Japan
University of Illinois, Chicago, IL
University of Pittsburgh, Pittsburgh, PA
Washington University School of Medicine, St. Louis, MO

Invited Presentations (selected):

- 1987 Invited Speaker (Acute phase mediated induction of alpha 1 acid glycoprotein expression), FDA, Bethesda, MD
- 1987 Invited Speaker (Acute phase induction of alpha 1-acid glycoprotein gene expression), Monsanto, St. Louis, MO
- 1987 Invited Speaker (Transcriptional control of rat hepatic gene expression) DMNB, NINDS, NIH, Bethesda, MD
- 1992 Invited Speaker (Mouse chimeras with a disrupted TGF- β 1 gene obtained by gene targeting), American Federation of Clinical Research, Clinical Meeting, Baltimore, MD
- 1992 Speaker (Homozygous TGF- β 1 null mice are runted and die within a few weeks), Mouse Molecular Genetics Meeting, Cold Spring Harbor Lab., NY
- 1992 Invited Speaker (TGF- β 1 null mouse), National Eye Institute, NIH, Bethesda, MD
- 1992 Invited Speaker (TGF- β 1 null mutation in mice causes excessive inflammatory response and early death), National Institute of Digestive Diseases and Kidney, Bethesda, MD
- 1993 Invited Speaker (Targeted disruption of the murine TGF- β 1 gene results in multifocal inflammation and early death). National Institute of Allergy and Infectious Diseases, NIH
- 1993 Invited Speaker (Gene targeting and knock-out mice: A technical challenge), National Institute of Dental Research, NIH
- 1993 Invited Speaker (TGF- β 1 null mutation in mice causes excessive inflammation and early death), AFRC, Washington DC
- 1993 Invited Speaker (TGF- β 1 knockout mice have a multifocal inflammatory disease and die early), NIH Research Festival Workshop, NIH
- 1994 Invited Speaker (TGF- β 1 knockout mice: Pathology and immune dysregulation), FDA, Bethesda, MD
- 1994 Invited Speaker (TGF- β 1 knockout mice: maternal rescue), National Institute of Child Health and Diseases, NIH
- 1995 Invited Speaker (TGF- β 1 knockout phenotype), Michigan State University, East Lansing, MI
- 1995 Invited Speaker (Phenotypic analysis of TGF- β 1 knockout mice), Wayne State University, Detroit, MI
- 1996 Invited Speaker for Plenary Session (Autoimmune manifestations in TGF- β 1 knockout mice), British Society of Immunology Annual Meeting, Brighton, UK
- 1996 Invited Speaker (Partial rescue of TGF- β 1 null lethal phenotype in β 2-microglobulin deficient background), Cytokine Interest Group, NIH
- 1996 Invited Speaker for Plenary Session (TGF- β 1 Null mouse: Isoform specific functions” British Society of Allergy and Clinical Immunology, Manchester, United Kingdom
- 1997 Invited Keynote Speaker (Knockout mice: new biology) Symposium on Molecule to Behavior, Bangalore, India
- 1997 Invited speaker and session chair (Abnormal Brain Development in Cdk5 Knockout Mice), Fourth International Symposium on Brain Dysfunction, Troina, Italy
- 1997 Invited Speaker (Generation of Fabry Mouse Model and Gene Therapy Approaches) Gene Therapy Institute, University of Lund, Lund, Sweden
- 1997 Invited Speaker (TGF- β 1 Knockout Mouse: A Model for Immune Dysregulation) University of Maryland, Baltimore, M
- 1998 Organized hands-on-workshop on “Production of Knockout Mice” Cancer Research Institute, Bombay, India

- 1998 Organized Lunch and Learn Session on Animal Modeling to Study Biology of Dental and Skeletal Systems at American Association of Dental Research (AADR) Meeting, Minneapolis
- 1998 Invited speaker (Temporal and spatial expression of DSPP-LacZ transgene) School of Dental Medicine, University of Pennsylvania, Philadelphia, PA
- 2000 Invited Speaker (TGF- β 1 null mouse phenotype) National Cancer Center, Tokyo, Japan
- 2000 Invited Speaker (Cdk5 conditional knockout mice display ALS-like phenotype) National Institute of Neuroscience, Tokyo, Japan
- 2000 Invited Speaker (Cdk5 conditional knockout mice) Trans-NIH Neurobiology Interest Group
- 2000 Organized hands-on-workshop on “Production of Transgenic and Knockout Mice” National Institute of Immunology, New Delhi, India
- 2001 Invited Reviewer for NIST Advanced Technology Program, Gaithersburg, MD
- 2002 Invited speaker (Molecular Characterization of amelogenesis and dentinogenesis) University of Toronto Dental School, Toronto, Canada
- 2002 Invited speaker (Functional genomics approach to study tooth development and disease) Canadian Institute of Health Research, University of Toronto, Toronto, Canada
- 2002 Invited speaker (Novel therapeutic approaches for Fabry disease using Fabry mouse model) 26th Annual Meeting of Indian Society of Cell Biology, Mumbai, India
- 2002 Invited speaker (Functional genomics: a gold standard for in vivo gene function), National Centre for Cell Sciences, Pune, India
- 2002 Invited speaker (Role of cdk5 in neurodegenerative diseases), National Institute of Mental and Health and Neurosciences, Bangalore, India
- 2002 Invited speaker (Molecular characterization of tooth development and disease) Trivendrum Dental and Medical College, Trivendrum, India
- 2002 Invited speaker (Functional genomics studies on genetic disorders) M. S. University, Vadodara, India
- 2002 Invited speaker (Elevated levels of globotriaosylceramide in salivary glands of Fabry mice) 80th Annual Meeting of Int. Association of Dental Research, San Diego, CA
- 2002 TGF- β 1 negatively regulates crystalline expression in teeth 80th Annual Meeting of International Association of Dental Research, San Diego, CA
- 2003 Invited speaker (Novel crystalline expression in murine teeth). National Eye Institute, NIH
- 2003 Invited speaker (Functional genomic approaches to study tooth development and disease). National Institute of Neurological Diseases and Stroke, NIH
- 2003 Invited speaker (Functional genomic of tooth development and disease). National Institute of Standards and Technology, Gaithersburg, MD
- 2003 Invited speaker (Cdk5 in brain development and disease) Cornell University, NY
- 2003 Invited speaker (ECM in tooth development and disease), NICHD ECM Club
- 2004 Invited speaker (Cdk5 and Neurodegeneration) Nathan Kline Institute, New York University School of Medicine, Orangeburg, NY
- 2005 Invited speaker (TGF- β and cancer), University of Texas Health Science Center, San Antonio
- 2006 Invited speaker (Cdk5: a key player brain development and disease) University of Otago, Dunedin, New Zealand

- 2006 Invited speaker (Amelogenins: Do they have roles outside of enamel?) University of Otago Dental School, Dunedin, New Zealand.
- 2007 Invited speaker (Cdk5: from brain to pain) Croucher Symposium, The Hong Kong University of Science and Technology, Hong Kong.
- 2007 Invited speaker (Cdk5 and pain signaling) University of Maryland, Baltimore, MD.

BIBLIOGRAPHY

Peer-Reviewed Articles:

1. Rajlakshmi, R., Kulkarni, A.B., and Ramakrishnan, C.V. Effects of undernutrition on acetylcholine levels in rat brain. *J. Neurochem.* 22: 119-221, 1974.
2. Gosavi, A.V., Renapurkar, D.M., and Kulkarni, A.B. Oxygen uptake studies on *H. diesingi*, Leidy. *Bulletin of Haffkine Institute* (Bombay) 6: 73-78, 1978.
3. Gosavi, A.V., Renapurkar, D.M., and Kulkarni, A.B. Effects of ascorbic acid on oxygen uptake of *H. diesingi*, Leidy. *Bulletin of Haffkine Institute* (Bombay) 7: 7-11, 1979.
4. Gosavi, A.V., Renapurkar, D.M., and Kulkarni, A.B. Effects of ascorbic acid on in vitro cultivation of *H. diesingi*, Leidy. *Bulletin of Haffkine Institute* (Bombay) 8: 15-20, 1980.
5. Kulkarni, A.B. Brain acetylcholine metabolism in malnourished rats (Ph.D. Thesis). *J. MSU* (Baroda, India), 1980.
6. Kulkarni, A.B. and Gaitonde, B.B. Thiamin levels in the brain regions of the thiamin deficient rats. *Bulletin of Haffkine Institute* (Bombay) 7: 71-74, 1980.
7. Kulkarni, A.B., Ved, H.S., Ramakrishnan, P., Pradhan, P., Renapurkar, D.M., and Sharma, K.D. Studies on superoxide dismutase and catalase activities in different tissues of rat infected with *P. berghei*. *Bulletin of Haffkine Institute* (Bombay) 9: 29-33, 1981.
8. Gosavi, A.V., Renapurkar, D.M., and Kulkarni, A.B. Effects of coconut milk on the embryonic development of *H. diesingi*, Leidy. *Biovigyanam* 7: 187-189, 1981.
9. Kulkarni, A.B., Deshpande, J.M., Sharma, K.D., Bapat, R.D., Kinare, S.G., and Shirodkar, M.V. Hepatic superoxide dismutase activity in normal and hepatitis B-virus infected langur monkey. *IRCS Med. Sc. Biochemistry* 9: 608, 1981.
10. Kulkarni, A.B. and Gaitonde, B.B. Effects of maternal protein deficiency on brain maturation of rat progeny. *Bulletin of Haffkine Institute* (Bombay) 9: 69-74, 1981.
11. Kulkarni, A.B., Ved, H.S., and Gaitonde, B.B. Effects of postweaning prolonged protein deficiency on rat brain enzymes. *Bulletin of Haffkine Institute* (Bombay) 9: 47-50, 1981.
12. Kulkarni, A.B. and Gaitonde, B.B. Effects of early undernutrition and subsequent rehabilitation on acetylcholine levels in rat brain. *Experientia* 38: 377-378, 1982.
13. Kulkarni, A.B., Bhopale, M.K., and Sharma, K.D. Pulmonary superoxide dismutase activity in the mouse infected with *A. caninum* larvae. *J. Helminthology* 57: 237-239, 1983.

14. Kulkarni, A.B. and Gaitonde, B.B. Effects of early thiamine deficiency and subsequent rehabilitation on the cholinergic system in the developing rat brain. *J. Nutr. Sci. Vitaminol.* (Tokyo) 29: 217-225, 1983.
15. Kulkarni, A.B., Renapurkar, D.M., and Sharma, K.D. Hepatic superoxide dismutase activity in the mouse infected with *P. berghei*. *Folio Parasitologica* 91: 89-91, 1983.
16. Gubits, R.M., Lynch, K.R., Kulkarni, A.B., Dolan, K.P., Gresik, E.W., Unger, P., and Feigelson, P. Differential regulation of alpha 2u-globulin gene family. *J. Biol. Chem.* 259: 12803-12809, 1984.
17. D'Souza, N.D., Kulkarni, A.B., Baxi, A.J., and Nadkarni, G.D. Enzymatic defense against oxygen toxicity in D-galactosamine induced hepatitis. *Ind. J. Gastroentrol.* 4: 87-88, 1985.
18. Kulkarni, A.B., Reinke, R., and Feigelson, P. Acute phase mediators and glucocorticoid elevate alpha 1- acid glycoprotein gene transcription. *J. Biol. Chem.* 260: 15386-15389, 1985.
19. Kulkarni, A.B., Gubits, R.M., and Feigelson, P. Developmental and hormonal regulation of alpha 2u-globulin gene transcription. *Proc. Natl Acad. Sci. USA* 82: 2579-2582, 1985.
20. D'Souza, N.D., Kulkarni, A.B., and Nadkarni, G.D. Effects of egg as a sole diet on hepatic lipid peroxidation and related defense system. *Ind. J. Biochem. Bioph.* 124: 111-113, 1987.
21. Dhar, V.N., Miller, D.A., Kulkarni, A.B., and Miller, O.J. Human ribosomal DNA fragments amplified in hamster cells are transcribed by DNA polymerase II and are not silver stained. *Molecular and Cellular Biol.* 7: 1289-1292, 1987.
22. Kulkarni, A.B., Huh, C.G., Becker, D., Geiser, A., Lyght, M., Flanders, K., Roberts, A., Sporn, M.B., Ward, J.M., and Karlsson, S. Transforming growth factor- β 1 null mutation in mice causes excessive inflammatory response and early death. *Proc. Natl Acad. Sci. USA* 90: 770-774, 1993.
23. Kulkarni, A.B. and Karlsson, S. Transforming growth factor- β 1 (TGF- β 1) knockout mice: A mutation in one cytokine causes a dramatic inflammatory disease. *Am. J. Path* 143: 3-9, 1993.
24. Glick, A.B., Kulkarni, A.B., Tennenbaum, T., Hennings, H., Flanders, K.C., O'Reilly, M., Sporn, M.B., Karlsson, S., and Yuspa, S.H. Loss of TGF- β expression in mouse epidermis and epidermal tumors is associated with hyperproliferation and a high risk malignant conversion. *Proc. Natl Acad. Sci. USA* 90: 6076-6080, 1993.
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27. Letterio, J.J., Geiser, A.G., Kulkarni, A.B., Roche, N.S., Sporn, M.B., and Roberts, A.B. Maternal rescue of transforming growth factor- β 1 null mice. *Science* 264: 1936-1938, 1994.

28. Christ, M., McCartney-Francis, N.L., Kulkarni, A.B., Ward, J.M., Mackall, C.L., Gress, R.E., Hines, K.L., Tuan, H., Karlsson, S. and Wahl, S.M. Immune dysregulation in TGF- β 1 deficient mice. *J. Immunol.* 153: 1936-1946, 1994.
29. Glick, A.B., Lee, M.M., Darwiche, N., Kulkarni, A.B., Karlsson, S., and Yuspa, S.H. Targeted deletion of the TGF- β 1 gene causes rapid progression to squamous cell carcinoma. *Genes and Dev.* 8: 2429-2440, 1994.
30. Kulkarni, A.B., Ward, J.M., Yaswen, L.R., Mackall, C.L., Bauer, S.R., Huh, C.G., Gress, R.E., and Karlsson, S. Pathology of TGF- β 1 null mice. *Am. J. Path.* 146: 264-275, 1995.
31. Martin, J., Dickson, M.C., Cousens, F., Kulkarni, A.B., Karlsson, S. and Akhurst, R.J. Analysis of homozygous TGF- β 1 null mouse embryos demonstrates defects in yolk sac vasculogenesis and hematopoiesis. *Proc. New York Acad. Sci.* 752: 300-308, 1995.
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36. Ohshima, T., Kozak, C., Nagle, J.W., Pant, H.C., Brady, R.O., and Kulkarni, A.B. Molecular cloning and chromosomal mapping of mouse gene encoding Cdk5 Regulatory subunit p35. *Genomics* 35: 372-375, 1996.
37. Yoshida, K., Cleaveland, E.S., Nagle, J.W., French, S., Yaswen, L., Ohshima, T., Brady, R.O., and Kulkarni, A.B. Molecular cloning of the mouse apolipoprotein D gene and its upregulated expression in Niemann-Pick disease type C mouse model. *DNA and Cell Biol.* 15: 873-882, 1996.
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39. Ohshima, T., Ward, J.M., Huh, C.G., Longenecker, G., Veeranna, Pant, H., Brady, R.O., Martin, L., and Kulkarni, A.B. Targeted disruption of Cdk5 gene results in abnormal corticogenesis, neuronal pathology and perinatal death. *Proc. Natl Acad. Sci. USA* 93: 11173-11178, 1996.
40. Letterio, J.J., Geiser, A.G., Kulkarni, A.B., Dang, H., Kong, L., Nakabayashi, T., and Roberts, A.B. Autoimmunity associated with TGF- β 1 deficiency in mice is dependent on MHC class II antigen expression. *J. Clin. Invest.* 98: 2109-2119, 1996.

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55. Totey, S. and Kulkarni, A.B. Gene targeting in immunology. *Ind. J. Exptl. Biol.* 38: 733-745, 2000.
56. Abe, A., Gregory, S., Lee, L., Killen, P.D., Brady, R.O., Kulkarni, A.B., and Shayman, J.A. Reduction of globotriaosylceramide in fabry disease mice by substrate deprivation. *J. Clin. Invest.* 105: 1563-1571, 2000.
57. Ashcroft, G.S., Lei, K., Jin, W., Longenecker, G., Kulkarni, A.B., Greenwell-Wald, McGrady, G., Song, X-Y., and Wahl, S.M. Secretory leukocyte protease inhibitor (SLPI) mediates non-redundant functions necessary for normal wound healing. *Nature Medicine* 6: 1147-1153, 2000.
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Peer-reviewed Review Articles:

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Invited (not peer-reviewed) Articles:

1. Feigelson, P., Reinke, R., Kulkarni, A.B., McLaughlin, M., Unger, P., and Gubits, R.M. Studies on gene structure, transcription and transcript processing in the hormonal and acute phase regulated alpha 1-acid glycoprotein and hormonal and the tissue specific expression of alpha 2u-globulin gene family. In: *Nuclear Envelope Structure and mRNA Maturation*, E. Smuckler and G. Clawson, Eds., New York: A.R. Liss, Inc., pp. 379-394, 1985.
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Chapters and Proceedings:

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