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Education:

Ph.D.	Albert Einstein College of Medicine, New York, NY, USA	1988
M.S.	Calcutta University, Calcutta, India	1981
B.S.	Calcutta University, Calcutta, India	1979

Professional Experience:

2008-present Chairman, Department of Microbiology & Immunology, Silverstein and Hutt Family Professor, Columbia University College of Physicians & Surgeons, New York, NY, USA.

2000-2009 Professor, Department of Immunobiology, Department of Molecular Biophysics and Biochemistry, Yale University School of Medicine, New Haven, CT, USA

1997-2000 Associate Professor, Section of Immunobiology, Department of Molecular Biophysics and Biochemistry. Yale University School of Medicine, New Haven, CT, USA

1991-1997 Assistant Professor, Section of Immunobiology and Department of Molecular Biophysics and Biochemistry, Yale University School of Medicine, New Haven, CT, USA

1989-1991 Postdoctoral Associate with Dr. David Baltimore, The Whitehead Institute for Biomedical Research, MIT, Cambridge, MA, USA

Honors or Recognition:

Honors:

Elected Member, National Academy of Sciences (USA)
Elected Member, National Academy of Medicine (USA)
Elected Member, American Academy of Arts and Sciences
Elected Fellow, American Association for the Advancement of Science

2019- 2022 ISI Web of Science: Highly Cited Researcher (Top 1% in citations for papers published over the past decade).

2023 AAISCR Lifetime Achievement Award
2017 Distinguished Alumni Award, Albert Einstein College of Medicine, New York
2011 Professor J.J. Ghosh Memorial Award, Calcutta University, India
2010 American Association of Indian Scientists in Cancer Research (AAISCR)-
Outstanding Scientist Award

- 2008 Cancer Research Institute-Irvington F.W. Alt Award for New Discoveries in Immunology.
- 2006 Ranbaxy Science Foundation Award in Basic Medical Research
- 2002 American Association of Immunologists (AAI)-Pharmingen Investigator Award
- 2001 MERIT Award, NIH
- 2023 Simpson Querrey Distinguished Lecture, Northwestern University Medical School
- 2021 Robert H. Costa Memorial Lecture, University of Illinois at Chicago
- 2018 Charles A. Janeway Memorial Lecture, Yale University School of Medicine, New Haven, CT
- 2018 Keynote Speaker, Korea Association of Immunology (KAI) International Meeting, Seoul, Korea
- 2007 State-of-the Art Lecture, API meeting, Kartause-Ittingen, Switzerland
- 2007 Charles I. Siegel Memorial Lecture, Dana Farber Cancer Institute, Boston, MA
- 2005 Keynote Speaker, American Society of Reproductive Immunology, Providence, Rhode Island
- 2005 State-of-the-Art Speaker, American College of Rheumatology, San Diego, CA
- 2003 S.T. Huang Memorial Lecture, University of Hong Kong
- 2003 Distinguished Lecturer, Ohio State University, OH
- 2003 Marookian Memorial Lecture, University of Pennsylvania, PA
- 2003 State-of-the Art Lecture, American Transplantation Society, Washington D.C.
- 2001 Spahn Memorial Lecture, OMRF. Oklahoma City, OK
- 1991-2004 Investigator, Howard Hughes Medical Institute
- 1989 Irvington Institute for Medical Research Postdoctoral Fellowship
- 1981 Sir R.B. Ghosh Fellowship of Calcutta University for study abroad
- 1981 First class first in the Masters examination of Calcutta University (Gold Medalist)

Editorial Functions:

Editorial Board, Immunity	2003-present
Board of Reviewing Editors, Science Signaling	2010-present
Editorial Board, Molecular and Cellular Biology,	1997-2012
Editorial Board, Immunology,	2000-2006
Editor, Immunity,	2000-2002
Editorial Board, Journal of Biological Chemistry,	2003 to 2008
Faculty of 1000,	2002 to 2006
Editorial Board, BioMed Central,	2001- 2012

Professional Service:

- 2019 Organizer, Cold Spring Harbor Asia Conference on NF-kB and Inflammation, Suzhou, China
- 2018 -present International Scientific Advisory Board, Max-Planck Institute, Freiburg, Germany
- 2019- present International Scientific Advisory Board, Max-Delbruck Center (DFG), Berlin, Germany
- 2016-present International Scientific Advisory Board, Shanghai Institute of Immunology, Shanghai, China

- 2019-2021 Scientific Advisory Board, National Center for Cell Science, Pune, India
 2015 International Scientific Advisory Board, Center for Life Sciences (CLS) for Peking University and Tsinghua University, Beijing, China.
- 2014 External Review Panel, Department of Immunology, Duke University
- 2013-2019 Scientific Advisory Board, Portage Pharmaceuticals Ltd.
- 2013 External Scientific Advisory Board, Max-Planck Institute, Freiburg, Germany
- 2012-2016 Standing Member, CMI-A Study Section, NIH
- 2010, 2012, 2014 Co-organizer, Cold Spring Harbor Meeting on Gene Expression Signaling in the Immune System
- 2007-2013 Scientific Review Council, Leukemia & Lymphoma Society
- 2007-2011 Scientific Advisory Board, Damon Runyon Cancer Research Foundation
- 2004-2008 Advisory Board, Center on Immune Receptors, Karolinska Institute, Stockholm, Sweden
- 2004, 2008 Co-organizer, Keystone Conference on NF- κ B
- 2000-2006 Board of Management, National Center for Biological Sciences, Bangalore, India
- 2001 Board of External Reviewers, Pasteur Institute, Paris
- 2001-2006 Board of Scientific Counselors, National Cancer Institute, USA
- Ad hoc member of Allergy and Immunology Study Section, National Institute of Health (1996, 2006), NIAMS Council (2005)
- 1998, 1999 Co-organizer of the New England Immunology Conference

Significant research contributions:

An immunologist and biochemist, Dr. Ghosh continues to be best known for his work on NF- κ B. NF- κ B transcription factors mediate diverse biological processes in virtually all areas of biomedical science. Since their discovery nearly thirty years ago, Dr. Ghosh made significant contributions that led to the current understanding of NF- κ B regulation and function. His work helped delineate NF- κ B signaling pathways in immune cells and, more broadly, facilitated understanding of the regulation of inducible transcription factors. His contributions began with his role in cloning of NF- κ B and I κ B proteins. Subsequently, he illuminated key aspects of NF- κ B regulation and function, including the critical regulatory role of I κ B and NF- κ B phosphorylation. He also collaborated on groundbreaking studies revealing the first NF- κ B structure and defining its biological role in regulation of apoptosis. Dr. Ghosh expanded our understanding of NF- κ B function by demonstrating contributions of NF- κ B to lymphocyte development and T cell function and contributed significantly to elucidation of immunological signaling pathways. Recent contributions to the field of innate immune signaling include the characterization of the role of mitochondria in macrophage ROS production and the identification of non-coding RNAs regulating pro-inflammatory gene expression. Dr. Ghosh made crucial contributions to pharmacological approaches to regulate NF- κ B by discovering that NF- κ B is a target of existing NSAID drugs and by pioneering a novel and efficacious approach to inhibit NF- κ B in inflammatory diseases and cancer. Through these and other efforts, Dr. Ghosh has made significant contributions that have impacted several areas of biomedical research, including immunology, cancer biology, and molecular pathology.

Complete Bibliography:

Total citations: 86,470; H-Index: 102

Research papers:

- 1 Raychaudhuri, P., Ghosh, S. and Maitra, U. Purification and characterization of a guanosine diphosphatase activity from calf liver microsomal salt wash proteins *Journal of Biological Chemistry*, 260, 8306-8311 (1986)
2. Raychaudhuri, P., Chevesich, J., Ghosh, S. and Maitra, U. Characterization of eukaryotic initiation factor 5 from rabbit reticulocytes; evidence that the initiation factor is a monomeric protein of Mr of about 58,000-62,000, *Journal of Biological Chemistry*, 262, 14222-14227 (1987)
3. Ghosh, S., Chevesich, J. and Maitra, U. Further characterization of eukaryotic initiation factor from rabbit reticulocytes; immunochemical characterization and phosphorylation by case in kinase II, *Journal of Biological Chemistry*, 264, 5134-5140 (1989)
4. Ghosh, S. and Baltimore, D. Activation in vitro of NF-kB by phosphorylation of its inhibitor Ikb, *Nature* 344, 678-682 (1990)
5. Ghosh, S., Gifford, A.M., Riviere, L., Tempst, P., Nolan, G.P. and Baltimore, D. Cloning of the p50 DNA binding subunit of NF-kB: Homology to rel and dorsal, *Cell* 62, 1019-1029 (1990)
6. Nolan, G.P., Ghosh, S., Liou, H-C., Tempst, P. and Baltimore, D. DNA binding and Ikb inhibition of the cloned p65 subunit of NF-kB, a rel-related polypeptide, *Cell* 64, 961-969 (1991)
7. Davis, N.*, Ghosh, S.*, Liou, H-C., Tempst, P., Baltimore, D. and Bose, H.R. Rel-associated pp40: an inhibitor of the rel family of transcription factors, *Science* 253, 1268-1271 (1991) [* equal contributors]
8. Raziuddin, Mikovits, J.A., Calvert, I., Ghosh, S., Kung, H-F. and Ruscetti, F.W. Negative regulation of human immunodeficiency virus type 1 expression in monocytes: role of 65 kDa plus 50 kDa NF-kB dimer, *Proc.Natl. Acad. Sci. USA* 88, 9426-9430 (1991)
9. Fujita, T., Nolan, G.P., Ghosh, S. and Baltimore, D. Independent modes of transcriptional activation by the p50 and p65 subunits of NF-kB, *Genes & Development* 6, 775-787 (1992)
10. Liou, H-C., Nolan, G.P., Ghosh, S., Fujita, T., and Baltimore, D. The NF-kB p50 precursor, p105, contains an internal Ikb-like inhibitor that preferentially inhibits p50, *EMBO J.* 8, 3003-3009 (1992)
11. Rong, B.L., Libermann, T.A., Kogawa, K., Ghosh, S., Cao, L.X., Pavan-Langston, D., and Dunkel, E.C. HSV-1-inducible proteins bind to NF-kB like sites in the HSV-1 genome, *Virology* 189, 750-756 (1992)

12. Kopp, E. and Ghosh, S. Inhibition of NF- κ B by sodium salicylate and aspirin, *Science* 265, 956-959 (1994)
13. Thompson, J.E., Phillips, R.J., Erdjument-Bromage, H., Tempst, P., and Ghosh, S. I κ B-b regulates the persistent response in a biphasic activation of NF- κ B, *Cell* 80, 573-582 (1995)
14. Ghosh, G., Van Duyne, G., Ghosh, S., and Sigler, P.B. Structure of NF- κ B p50 homodimer bound to a κ B Site, *Nature* 373, 303-310 (1995)
15. Beg, A.A., Sha, W.C., Bronson, R.T., Ghosh, S., and Baltimore, D. Embryonic lethality and liver degeneration in mice lacking the RelA component of NF- κ B, *Nature* 376, 167-170 (1995)
16. Min, W., Ghosh, S., Lengyl, P. The interferon-inducible p202 protein as a modulator of transcription: inhibition of NF- κ B, c-Fos, and c-Jun activities, *Mol.Cell.Biol.* 16, 359-368 (1996)
17. Lin, L., Ghosh, S. A Glycine-Rich Region in NF- κ B p105 Functions as a Processing Signal for the Generation of the p50 Subunit *Mol.Cell.Biol* 16, 2248-2254 (1996)
18. DiDonato, J., Mercurio, F., Rosette, C., Wu-Li, J., SuYang, H., Ghosh, S., Karin, M. Mapping of the Inducible I κ B Phosphorylation Sites That Signal Its Ubiquitination and Degradation *Mol.Cell.Biol.* 16, 1295-1304 (1996)
19. Johnson, D., Douglas, I., Min, W., Jahnke, A., Ghosh, S., Pober, J. A sustained reduction in I κ B-b levels may contribute to persistent NF- κ B activation in human endothelial cells *Journal of Biological Chemistry* 271, 16317-16322 (1996)
20. Su Yang, H., Douglas, I., Phillips, R., Ghosh, S. The role of unphosphorylated, newly synthesized I κ B-b in the persistent activation of NF- κ B *Mol. Cell. Biol.* 16, 5444-5449 (1996)
21. Phillips, R.J., Gustafson, S., Ghosh, S. Identification of a novel NF- κ B p50 related protein in B-lymphocytes. *Mol Cell. Biol.* 16, 7089-7097 (1996)
22. Packham, G., Lahti, J.M., Fee, B.E., Gawn, J.M., Coustan-Smith, E., Campana, D., Douglas, I., Kidd, V.J., Ghosh, S., and Cleveland, J.L. Fas activates NF- κ B and induces apoptosis in T-cells by signaling pathways distinct from those induced by TNF- α . *Cell Death and Differentiation* 4, 130-139 (1997)
23. Zhong, H., SuYang, H., Erdjument-Bromage, H., Tempst, P., Ghosh, S. The transcriptional activity of NF- κ B is regulated by I κ B-associated PKAc subunit through a cyclic AMP independent mechanism, *Cell* 89, 413-424 (1997)
24. Phillips, R.J., Ghosh, S. Regulation of I κ B-b in WEHI 231 mature B-cells. *Mol. Cell. Biol.* 17, 4390-4396 (1997)
25. Chen, Y.-Q., Ghosh, S., Ghosh, G. A novel DNA recognition mode by NF- κ B p65 homodimer, *Nature Struc. Biol.* 5, 67-73 (1998)
26. Zhong, H., Voll, R. E. and Ghosh, S. Phosphorylation of NF- κ B p65 by PKA stimulates transcriptional activity by promoting a novel bivalent interaction with the co-activator CBP/p300, *Molecular Cell* 1, 661-671 (1998)

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30. Wu, C. and Ghosh, S. b-TrCP mediates the signal-induced ubiquitination of I κ B β , *Journal of Biological Chemistry* 274, 29591-29594 (1999)
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38. May, M. J., D'Acquisto, F., Madge, L. A., Gloeckner, J., Pober, J. S. and Ghosh, S. Selective inhibition of NF- κ B activation by a peptide that blocks the interaction of NEMO with the I κ B kinase complex. *Science* 289,1550-1554 (2000)
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49. Ma XY, Wang H, Ding B, Zhong H, Ghosh S, Lengyel P. The interferon-inducible p202a protein modulates NF- κ B activity by inhibiting the binding to DNA of p50/p65 heterodimers and p65 homodimers, while enhancing the binding of p50 homodimers. *Journal of Biological Chemistry* 278, 23008-23019 (2003)
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63. Lee, K.-Y., D'Acquisto, F., Hayden, M. S., Shim, J.-H., and Ghosh, S. Protein Kinase PDK1 Nucleates T-cell Receptor-Induced Signaling Complex for NF- κ B Activation, *Science* 307, 114-118 (2005).
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