CURRICULUM VITAE

Venki Ramakrishnan

Nationality U.S. (since 1985) & U.K. (since 2011) (b. India in 1952)

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Education

1971	B.Sc.	Baroda University, India	Physics
1976	Ph.D.	Ohio University	Physics
1976-78	Graduate student	University of California, San Diego	Biology

Positions held

1978-82	Postdoctoral Fellow, Department of Chemistry, Yale University.
1983-95	Biology Department, Brookhaven National Laboratory: Assistant Biophysicist, 1983-85; Associate Biophysicist, 1985-88; Biophysicist, 1988-90; Biophysicist with tenure, 1990-94; Senior Biophysicist with tenure, 1994-95.
1995-99	Professor, Biochemistry Department, University of Utah. Member, Graduate Programs in Molecular Biology and Biological Chemistry
1999-	MRC Laboratory of Molecular Biology, Cambridge, England. Group Leader, 1999- ; Joint Head, Structural Studies Division, 2005-15; Deputy Director, 2013-16.
2008-	Fellow, Trinity College, Cambridge.
2015-2020	President, The Royal Society, London.

Research Interests:
Current interest: Structure and function of ribosomes. Action of antibiotics on ribosomes.
Past interests: Chromatin structure. X-ray crystallography, especially the use of anomalous scattering and MAD. Neutron scattering.

Other Professional Activities:
Editorial Board of Cell (2001-2015) and PNAS (2008-2015)
Member, Scientific Advisory Committee of EMBL (2002-2006, 2013-2015)

Member, Scientific Advisory Committee of IMP, Vienna (2008-2011)
Member, Scientific Advisory Board of Rib-X Pharmaceuticals (2004-2011)
Scientific Partner, Ahren Innovation Capital (2019-)
Board Member, British Library (2020-)
Member, Scientific Advisory Board, Isomorphic Labs (2022-)

Academic Awards and Honors:
Guggenheim Fellowship, 1991-92
Member of EMBO (elected 2002)
Fellow of the Royal Society (elected 2003)
Member, National Academy of Sciences, USA (elected 2004)
Louis Jeantet Prize for Medicine, 2007
Datta Medal and Lecture, FEBS annual meeting, Vienna (2007)
Heatley Medal, British Biochemical Society, 2008
Foreign Member, Indian National Science Academy (elected 2008)
Fellow, Trinity College, Cambridge (elected 2008)
Rolf-Sammet professorship, University of Frankfurt (2009)
Nobel Prize in Chemistry (shared with Tom Steitz and Ada Yonath) (2009)
Sir Hans Krebs Medal and Lecture, FEBS annual meeting, Seville (2012)
Jimenez Díaz Prize & Lecture, Madrid 2014
Fellow, American Philosophical Society (elected 2020)

Selected named lectures include:
Stetten Lecture, NIH, 2000
Dorcas Cummings Lecture, 60th Cold Spring Harbor Symposium (on The Ribosome), 2001
Alkis Seraphim Lecture, Cambridge University, 2001
Joseph Black Lecture, Glasgow University, 2001
Randall Lecture, Kings College, 2001
Dahlem Lecture, Max Planck Institute, Berlin, 2001
Zurich Chemical Society Lecture, 2001
(Inaugural) G.N. Ramachandran Memorial Lecture, India, 2002
Weissbach Lecture, Rockefeller University, 2002
EMBL Distinguished Visitor Lecture, 2002
Max Perutz Memorial Lecture, British Crystallography Association, York, 2003
Skirball Symposium, *Molecular Machines*, New York, 2003
EMBO Lecture, Symposium on Recognition, Heidelberg, 2003
Linné Lecture, Uppsala University, 2004
BSA Distinguished Lecture, Brookhaven National Laboratory, 2004
Kathleen Kendrick Memorial Lecture, Ohio State University, 2005
Marker Lectures, Pennsylvania State University, 2008
Simpson Lecture, SUNY Stony Brook, 2008
Dintzis Lecture, Johns Hopkins University, 2009
Mendel Lecture, Brno, Czech Republic, 2009
Rolf-Sammet Lectures, Frankfurt, 2009
John M. Buchanan Lecture, MIT, 2009
Linacre Lecture, Cambridge, 2010
50th Anniversary Distinguished Lecture, UCSD, 2011

Ruth & Eddie Hughes Lecture, Caltech, 2011
Anfinsen Lecture, Weizmann Institute, 2011
Sackler Lectures, Cambridge & London, 2011
Skirball Symposium, *Beyond the Central Dogma*, New York University, 2011
Maclyn McCarty Lecture, Annual Helen Hayes Whitney Fellows Meeting, 2011
Martha Ludwig Lecture, University of Michigan, 2011
Dorothy Hodgkin Lecture, Oxford, 2012
Wright Colloquium, Geneva, 2013
Sadler Lecture, University of Colorado, Denver, 2014
Tetelman Lecture, Yale, 2014
Chandler Medal Lecture, Columbia University, 2015
Baddiley Lecture, Newcastle University, 2016
Chatt Lecture, John Innes Centre, Norwich, 2016
G.N Ramachandran Plenary Lecture, International Congress of Biophysics, Edinburgh 2017
Erasmus Darwin Lecture, Lichfield, 2017
Sjostrand Lecture, Stockholm, 2018
David Eisenberg Distinguished Lecture, UCLA, 2019
(Inaugural) Thomas Steitz Lecture, Yale University, 2019
Pauli Lectures, ETH, Zürich, 2019
Rodney Porter Memorial Lecture, Oxford, 2022

BOOKS
Gene Machine: The Race to Decipher the Secrets of the Ribosome
2018: Oneworld (UK); Basic Books (USA)

Why We Die. The New Science of Aging and the Quest for Immortality
2024: Hodder and Stoughton (UK), William Morrow/HarperCollins (USA)

Literary Festivals:
Hay, Edinburgh, Oxford, Cheltenham, Jaipur and several others, from 2018 onward.

SCIENTIFIC PUBLICATIONS

Brito Querido, J., Díaz-López, I., and Ramakrishnan, V. (2023). The molecular basis of translation initiation and its regulation in eukaryotes. *Nat Rev Mol Cell Biol*. https://doi.org/10.1038/s41580-023-00624-9

Chandrasekaran, V., Desai, N., Burton, N. O., Yang, H., Price, J., Miska, E. A., and Ramakrishnan, V. Visualizing formation of the active site in the mitochondrial ribosome. *eLife* **10**, (2021). https://doi.org/10.7554/elife.68806

Desai, N., Yang, H., Chandrasekaran, V., Kazi, R., Minczuk, M., and Ramakrishnan, V. (2020). Elongational stalling activates mitoribosome-associated quality control. *Science* **370**, 1105-1110.

Brito Querido, J., Sokabe, M., Kraatz, S., Gordiyenko, Y., Skehel, J. M., Fraser, C. S., and Ramakrishnan, V. (2020). Structure of a human 48S translational initiation complex. *Science* **369**, 1220-1227.

Gordiyenko, Y., Llácer, J. L., and Ramakrishnan, V. (2019). Structural basis for the inhibition of translation through eIF2α phosphorylation. *Nat Commun* **10**, 2640.

Chandrasekaran, V., Juszkiewicz, S., Choi, J., Puglisi, J. D., Brown, A., Shao, S., Ramakrishnan, V., and Hegde, R. S. (2019). Mechanism of ribosome stalling during translation of a poly(A) tail. *Nat Struct Mol Biol* **26**, 1132-1140.

Rae, C. D., Gordiyenko, Y., and Ramakrishnan, V. (2019). How a circularized tmRNA moves through the ribosome. *Science* **363**, 740-744.

Juszkiewicz, S., Chandrasekaran, V., Lin, Z., Kraatz, S., Ramakrishnan, V., and Hegde, R. S. (2018). ZNF598 Is a Quality Control Sensor of Collided Ribosomes. *Mol Cell* **72**, 469-481.e7.

Llácer, J. L., Hussain, T., Saini, A. K., Nanda, J. S., Kaur, S., Gordiyenko, Y., Kumar, R., Hinnebusch, A. G., Lorsch, J. R., and Ramakrishnan, V. (2018). Translational initiation factor eIF5 replaces eIF1 on the 40S ribosomal subunit to promote start-codon recognition. *Elife* **7**

Ramakrishnan, V., and Henderson, R. (2018). Thomas A. Steitz - obituary (1940-2018). *Science* **362**, 897.

N. Desai, A. Brown, A. Amunts, V. Ramakrishnan (2017) The structure of the yeast mitochondrial ribosome. *Science* **355**, 528-531.

A. Brown, S. Rathore, D. Kimanius, S. Aibara, X. C. Bai, J. Rorbach, A. Amunts, V. Ramakrishnan (2017) Structures of the human mitochondrial ribosome in native states of assembly. *Nat Struct Mol Biol* **24**, 866-869.

N. R. James, A. Brown, Y. Gordiyenko, V. Ramakrishnan (2016) Translational termination without a stop codon. *Science* **354**, 1437-1440.

Hussain, T., Llácer, J. L., Wimberly, B. T., Kieft, J. S., and Ramakrishnan, V. (2016). Large-Scale Movements of IF3 and tRNA during Bacterial Translation Initiation. *Cell* **167**, 133-144.e13.

Brown, A., Fernández, I. S., Gordiyenko, Y., and Ramakrishnan, V. (2016). Ribosome-dependent activation of stringent control. *Nature* **534**, 277-280.

Murray, J., Savva, C. G., Shin, B. S., Dever, T. E., Ramakrishnan, V., and Fernández, I. S. (2016). Structural characterization of ribosome recruitment and translocation by type IV IRES. *Elife* **5**

Brown, A., Shao, S., Murray, J., Hegde, R. S., and Ramakrishnan, V. (2015). Structural basis for stop codon recognition in eukaryotes. *Nature* **524**, 493-496.

Llácer, J. L., Hussain, T., Marler, L., Aitken, C. E., Thakur, A., Lorsch, J. R., Hinnebusch, A. G., and Ramakrishnan, V. (2015). Conformational Differences between Open and Closed States of the Eukaryotic Translation Initiation Complex. *Mol Cell* **59**, 399-412.

Amunts, A., Brown, A., Toots, J., Scheres, S. H., and Ramakrishnan, V. (2015). The structure of the human mitochondrial ribosome. *Science* **348**, 95-98.

Amunts, A., Fiedorczuk, K., Truong, T. T., Chandler, J., Peter Greenberg, E., and Ramakrishnan, V. (2015). Bactobolin A Binds to a Site on the 70S Ribosome Distinct from Previously Seen Antibiotics. *Journal of Molecular Biology* **427**, 753-755.

Ramakrishnan, V. (2014). The ribosome emerges from a black box. *Cell* **159**, 979-984.

Amunts, A., Brown, A., Bai, X. C., Llacer, J. L., Hussain, T., Emsley, P., Long, F., Murshudov, G., Scheres, S. H., and Ramakrishnan, V. (2014). Structure of the yeast mitochondrial large ribosomal subunit. *Science* **343**, 1485-1489.

Brown, A., Amunts, A., Bai, X. C., Sugimoto, Y., Edwards, P. C., Murshudov, G., Scheres, S. H., and Ramakrishnan, V. (2014). Structure of the large ribosomal subunit from human mitochondria. *Science* **346**, 718-722.

Hussain, T., Llacer, J. L., Fernandez, I. S., Munos, A., Martin-Marcos, P., Savva, C. G., Lorsch, J. R., Hinnebusch, A. G., and Ramakrishnan, V. (2014). Structural changes enable start codon recognition by the eukaryotic translational initiation complex. *Cell* **159**, 597-607.

Fernandez, I. S., Bai, X. C., Murshudov, G., Scheres, S. H., and Ramakrishnan, V. (2014). Initiation of translation by cricket paralysis virus IRES requires its translocation in the ribosome. *Cell* **157**, 823-831.

Ban, N., Beckmann, R., Cate, J. H., Dinman, J. D., Dragon, F., Ellis, S. R., Lafontaine, D. L., Lindahl, L., Liljas, A., Lipton, J. M., McAlear, M. A., Moore, P. B., Noller, H. F., Ortega, J., Panse, V. G., Ramakrishnan, V., Spahn, C. M., Steitz, T. A., Tchorzewski, M., Tollervey, D., Warren, A. J., Williamson, J. R., Wilson, D., Yonath, A., and Yusupov, M. (2014). A new system for naming ribosomal proteins. *Curr Opin Struct Biol* **24C**, 165-169.

Perez-Fernandez, D., Shcherbakov, D., Matt, T., Leong, N. C., Kudyba, I., Duscha, S., Boukari, H., Patak, R., Dubbaka, S. R., Lang, K., Meyer, M., Akbergenov, R., Freihofer, P., Vaddi, S., Thommes, P., Ramakrishnan, V., Vasella, A., and Bottger, E. C. (2014). 4'-O-substitutions determine selectivity of aminoglycoside antibiotics. *Nat Commun* **5**, 3112.

Fernandez, I. S., Ng, C. L., Kelley, A. C., Wu, G., Yu, Y. T., and Ramakrishnan, V. (2013). Unusual base pairing during the decoding of a stop codon by the ribosome. *Nature* **500**, 107-110.

Fernandez, I. S., Bai, X. C., Hussain, T., Kelley, A. C., Lorsch, J. R., Ramakrishnan, V., and Scheres, S. H. (2013). Molecular architecture of a eukaryotic translational initiation complex. *Science* **342**, 1240585.

Voorhees, R. M., and Ramakrishnan, V. (2013). Structural basis of the translational elongation cycle. *Annu Rev Biochem* **82**, 203-236.

Voorhees, R. M., Mandal, D., Neubauer, C., Kohrer, C., Rajbhandary, U. L., and Ramakrishnan, V. (2013). The structural basis for specific decoding of AUA by isoleucine tRNA on the ribosome. *Nat Struct Mol Biol* **20**, 641-643.

Tourigny, D. S., Fernandez, I. S., Kelley, A. C., and Ramakrishnan, V. (2013a). Elongation factor G bound to the ribosome in an intermediate state of translocation. *Science* **340**, 1235490.

Tourigny, D. S., Fernandez, I. S., Kelley, A. C., Vakiti, R. R., Chattopadhyay, A. K., Dorich, S., Hanessian, S., and Ramakrishnan, V. (2013b). Crystal structure of a bioactive pactamycin analog bound to the 30S ribosomal subunit. *J Mol Biol* **425**, 3907-3910.

Agirrezabala, X., Fernandez, I. S., Kelley, A. C., Carton, D. G., Ramakrishnan, V., and Valle, M. (2013). The ribosome triggers the stringent response by RelA via a highly distorted tRNA. *EMBO Rep* **14**, 811-816.

Matt, T., Ng, C. L., Lang, K., Sha, S. H., Akbergenov, R., Shcherbakov, D., Meyer, M., Duscha, S., Xie, J., Dubbaka, S. R., Perez-Fernandez, D., Vasella, A., Ramakrishnan, V., Schacht, J., and Bottger, E. C. (2012). Dissociation of antibacterial activity and aminoglycoside ototoxicity in the 4-monosubstituted 2-deoxystreptamine apramycin. *Proc Natl Acad Sci U S A* **109**, 10984-10989.

Neubauer, C., Gillet, R., Kelley, A. C., and Ramakrishnan, V. (2012). Decoding in the absence of a codon by tmRNA and SmpB in the ribosome. *Science* **335**, 1366-1369.

Jin, H., Kelley, A. C., and Ramakrishnan, V. (2011). Crystal structure of the hybrid state of ribosome in complex with the guanosine triphosphatase release factor 3. *Proc Natl Acad Sci U S A* **108**, 15798-15803.

Ramakrishnan, V. (2011). Molecular biology. The eukaryotic ribosome. *Science* **331**, 681-682.

Schmeing T.M., Voorhees R.M., Kelley A.C., and Ramakrishnan V. (2011). How mutations in tRNA distant from the anticodon affect the fidelity of decoding. *Nat Struct Mol Biol.* **18**, 432-436.

Voorhees, R. M., Schmeing, T. M., Kelley, A. C., and Ramakrishnan, V. (2010). The mechanism for activation of GTP hydrolysis on the ribosome. *Science* **330**, 835-838.

Ng, C. L., Lang, K., Meenan, N. A., Sharma, A., Kelley, A. C., Kleanthous, C., and Ramakrishnan, V. (2010). Structural basis for 16S ribosomal RNA cleavage by the cytotoxic domain of colicin E3. *Nat Struct Mol Biol* **17**, 1241-1246.

Ramakrishnan, V. (2010). Unraveling the Structure of the Ribosome (Nobel Lecture). *Angew Chem Int Ed Engl* **49**, 4355-4380.

Jin, H., Kelley, A. C., Loakes, D., and Ramakrishnan, V. (2010). Structure of the 70S ribosome bound to release factor 2 and a substrate analog provides insights into catalysis of peptide release. *Proc Natl Acad Sci U S A* **107**, 8593-8598.

Neubauer, C., Gao, Y. G., Andersen, K. R., Dunham, C. M., Kelley, A. C., Hentschel, J., Gerdes, K., Ramakrishnan, V., and Brodersen, D. E. (2009). The structural basis for mRNA recognition and cleavage by the ribosome-dependent endonuclease RelE. *Cell* **139**, 1084-1095.

Schmeing, T. M., and Ramakrishnan, V. (2009). What recent ribosome structures have revealed about the mechanism of translation. *Nature* **461**, 1234-1242.

Schmeing, T. M., Voorhees, R. M., Kelley, A. C., Gao, Y. G., Murphy, F. V. 4th., Weir, J. R., and Ramakrishnan, V. (2009). The crystal structure of the ribosome bound to EF-Tu and aminoacyl-tRNA. *Science* **326**, 688-694.

Gao, Y. G., Selmer, M., Dunham, C. M., Weixlbaumer, A., Kelley, A. C., and Ramakrishnan, V. (2009). The structure of the ribosome with elongation factor G trapped in the posttranslocational state. *Science* **326**, 694-699.

Schuette, J. C., Murphy, F. V. t., Kelley, A. C., Weir, J. R., Giesebrecht, J., Connell, S. R., Loerke, J., Mielke, T., Zhang, W., Penczek, P. A., Ramakrishnan, V., and Spahn, C. M. (2009). GTPase activation of elongation factor EF-Tu by the ribosome during decoding. *Embo J* **28**, 755-765.

Voorhees, R. M., Weixlbaumer, A., Loakes, D., Kelley, A. C., and Ramakrishnan, V. (2009). Insights into substrate stabilization from snapshots of the peptidyl transferase center of the intact 70S ribosome. *Nat Struct Mol Biol* **16**, 528-533.

Weixlbaumer, A., Jin, H., Neubauer, C., Voorhees, R.M., Petry, S., Kelley, A.C., and Ramakrishnan, V. (2008). Insights into translational termination from the structure of RF2 bound to the ribosome. *Science* **322**, 953-956.

Ramakrishnan, V. (2008). What we have learned from ribosome structures. (The Heatley Medal Lecture). *Biochem Soc Trans* **36**, 567-74.

Weixlbaumer A, Petry S, Dunham CM, Selmer M, Kelley AC, Ramakrishnan V (2007). Crystal structure of the ribosome recycling factor bound to the ribosome. *Nat. Struct. Mol. Biol.* **14**, 733-737.

Weixlbaumer, A., Murphy, F. V. 4th., Dziergowska, A., Malkiewicz, A., Vendeix, F. A., Agris, P. F., and Ramakrishnan, V. (2007). Mechanism for expanding the decoding capacity of transfer RNAs by modification of uridines. *Nat. Struct. Mol. Biol.* **14**, 498-502.

Passmore, L. A., Schmeing, T. M., Maag, D., Applefield, D. J., Acker, M. G., Algire, M. A., Lorsch, J. R., and Ramakrishnan, V. (2007). The eukaryotic translation initiation factors eIF1 and eIF1A induce an open conformation of the 40S ribosome. *Mol Cell* **26**, 41-50.

Dunham, C. M., Selmer, M., Phelps, S. S., Kelley, A. C., Suzuki, T., Joseph, S., and Ramakrishnan, V. (2007). Structures of tRNAs with an expanded anticodon loop in the decoding center of the 30S ribosomal subunit. *RNA* **13**, 817-823.

Selmer, M., Dunham, C.M., Murphy, F.V. IV, Weixlbaumer, A., Petry, S., Kelley, A.C., Weir, J.R. and Ramakrishnan, V. (2006). Structure of the 70S ribosome complexed with mRNA and tRNA. *Science* **313**, 1935-1942.

Petry, S., Brodersen, D.E, Murphy, F.V. IV, Dunham, C.M., Selmer, M., Tarry, M.J., Kelley, A.C., and Ramakrishnan, V. (2005). Crystal structures of the ribosome in complex with release factors RF1 and RF2 bound to a cognate stop codon. *Cell* **123**, 1255–1266.

Ogle, J.M. and Ramakrishnan, V. (2005). Structural insights into translational fidelity. *Ann. Rev.*

Biochem. **74**, 129-177.

Murphy, F.V. IV and Ramakrishnan, V. (2004). Structure of a purine-purine wobble base pair in the decoding center of the ribosome. *Nat. Struct. Mol. Biol*. **11**, 1251-1252.

Murphy, F.V. IV, Ramakrishnan, V., Malkiewicz, A. and Agris, P.F. (2004). The role of modifications in codon discrimination by tRNALys^{UUU} *Nat. Struct. Mol. Biol*. **11,** 1186-1191

Ogle, J.M., Carter, A.P. and Ramakrishnan, V. (2003). Insights into the decoding mechanism from recent ribosome structures. *Trends Bioch. Sci*. **28**, 259-266.

Valle, M., Gillet, R., Kaur, S., Henne, A., Ramakrishnan, V. and Frank, J. (2003). Visualizing tmRNA entry into a stalled ribosome. *Science* **300**, 127-30.

Ogle, J.M., Murphy, F.V. IV, Tarry, M.J. and Ramakrishnan V. (2002). Selection of tRNA by the ribosome requires a transition from an open to a closed form. *Cell* **111**, 721-732.

Ramakrishnan, V. (2002) Ribosome structure and the mechanism of translation. *Cell* **108**, 557-572.

Brodersen, D. E., Clemons W. M. Jr., Carter, A. P., Wimberly, B. T., and Ramakrishnan, V. (2002). Crystal structure of the 30S ribosomal subunit from *Thermus thermophilus.* Proteins of the 30S subunit and their interactions with 16S RNA. *J. Mol. Biol.* **316**, 723 - 766.

Brodersen, D.E., Carter, A.P., Clemons, W.M. Jr., Morgan-Warren, R. J., Murphy F.V. IV, Ogle, J. M., Tarry, M. J., Wimberly, B.T. and Ramakrishnan, V. (2001). Atomic structures of the 30S subunit and its complexes with ligands and antibiotics. *Cold Spring Harbor Symp. Quant. Biol*. **66**, 17-32.

Clemons, W.M. Jr., Brodersen, D.E., McCutcheon, J.P., May, J.L.C., Carter, A.P., Morgan-Warren, R.J., Wimberly, B.T. and Ramakrishnan, V. (2001). Crystal structure of the 30S ribosomal subunit from *Thermus thermophilus*. Purification, crystallization and structure determination. *J. Mol. Biol*. **310**, 827-843.

Ogle, J.M., Brodersen, D.E., Clemons, W.M. Jr., Tarry, M.J., Carter, A.P. and Ramakrishnan, V. (2001). Recognition of cognate transfer RNA by the 30S ribosomal subunit. *Science*, **292**, 897-902.

Ramakrishnan, V. and Moore, P.B. (2001). Atomic structures at last: the ribosome in 2000. *Curr. Opin. Struct. Biol.* **11,** 144-154.

Carter, A. P., Clemons Jr, W. M., Brodersen, D. E., Morgan-Warren, R. J., Hartsch, T., Wimberly, B. T., and Ramakrishnan, V. (2001). Crystal Structure of an Initiation Factor Bound to the 30S Ribosomal Subunit. *Science* **291**, 498-501.

Brodersen, D.E., Clemons, W.M., Jr., Carter, A.P., Morgan-Warren, R.J., Wimberly, B.T. and Ramakrishnan, V. (2000). The structural basis for the action of the antibiotics tetracycline, pactamycin and hygromycin B on the 30S ribosomal subunit. *Cell* **103**, 1143-1154 (2000).

Wimberly, B.T., Brodersen, D.E., Clemons, W.M. Jr., Carter, A.P., Morgan-Warren, R.J., Vonrhein,

C., Hartsch, T. and Ramakrishnan, V. (2000). Structure of the 30S ribosomal subunit. *Nature* **407**, 327-339.

Carter, A.P., Clemons, W.M. Jr., Brodersen, D.E., Morgan-Warren, R.J., Wimberly, B.T. and Ramakrishnan, V. (2000). Functional insights from the structure of the 30S ribosomal subunit and its interactions with antibiotics. *Nature* **407**, 340-348.

Allard, P., Rak, A. V., Wimberly, B. T., Clemons, W. M., Jr., Kalinin, A., Helgstrand, M., Garber, M. B., Ramakrishnan, V. & Härd, T. (2000). Another piece of the ribosome: Solution structure of S16 and its location in the 30S subunit. *Structure Fold Des*. **8**, 875-882.

Shu, F., Ramakrishnan, V. & Schoenborn, B. P. (2000). Enhanced visibility of hydrogen atoms by neutron crystallography on fully deuterated myoglobin. *Proc Natl Acad Sci U S A* **97**(8), 3872-3877.

Ramakrishnan, V., Capel, M.S., Clemons, W.M. Jr., May, J.L.C., and Wimberly, B.T. (2000). Progress towards the crystal structure of a bacterial 30S ribosomal subunit. In *The Ribosome. Structure, Function, Antibiotics and Cellular Interactions* (Garrett, R.A., Douthwaite, S.R., Liljas, A., Matheson, A.T., Moore, P.B. and Noller H.F., eds), ASM Press, Washington D.C.

White, S.W., Clemons, W.M., Davies, C., Ramakrishnan, V. and Wimberly, B.T. (2000). Structure of bacterial ribosomal proteins: High resolution probes of the architecture and mechanism of the ribosome. In *The Ribosome. Structure, Function, Antibiotics and Cellular Interactions* (Garrett, R.A., Douthwaite, S.R., Liljas, A., Matheson, A.T., Moore, P.B. and Noller H.F., eds), ASM Press, Washington D.C.

Clemons, W. M. Jr., May, J. L. C., Wimberly, B. T., McCutcheon, J. P., Capel, M. S., and Ramakrishnan, V. (1999). Structure of a bacterial 30S ribosomal subunit at 5.5 Å resolution. *Nature* **400**, 833-840.

Wimberly, B.T., Guymon, R., McCutcheon, J.P., White, S.W. and Ramakrishnan, V. (1999). A detailed view of a ribosomal active site: the structure of the L11-RNA complex. *Cell* **97**, 491-502.

McCutcheon J.P., Agrawal, R.K., Philips, S.M., Grassucci, R.A., Gerchman S,E., Clemons, W.M. Jr, Ramakrishnan, V. and Frank, J. (1999). Location of translational initiation factor IF3 on the small ribosomal subunit. *Proc Natl Acad Sci USA* **96**, 4301-4306.

Clemons, W.M. Jr., Gowda, K., Black, S.D., Zwieb, C. and Ramakrishnan, V. (1999) Crystal Structure of the Conserved Subdomain of Human Protein SRP54M at 2.1 Å Resolution: Evidence for the Mechanism of Signal Peptide Binding. *J. Mol. Biol.* **292**, 697-705.

Angus-Hill, M.L., Dutnall, R.N., Tafrov, S.T., Sternglanz, R. and Ramakrishnan, V. (1999). Crystal structure of the histone acetyltransferase Hpa2: A tetrameric member of the Gcn5-related N-acetyltransferase superfamily. *J. Mol. Biol.* **294**, 1311-1325.

Dutnall R.N., Tafrov S.T., Sternglanz, R., Ramakrishnan, V. (1999). Structure of the yeast histone acetyltransferase Hat1: insights into substrate specificity and implications for the Gcn5-related N-acetyltransferase superfamily. *Cold Spring Harb Symp Quant Biol* **63**, 501-507.

Ramakrishnan, V. and White, S.W. (1998). Ribosomal protein structures: insights into the architecture, machinery and evolution of the ribosome. *Trends Biochem Sci*. **23**, 208-212.

Dutnall, R.N., Tafrov, S.T., Sternglanz, R. and Ramakrishnan, V. (1998). Crystal structure of the yeast histone acetyltransferase Hat1. *Cell* **94**, 427-438.

Zhou, Y.-B., Gerchman, S.E., Ramakrishnan, V., Travers, A. and Muyldermans, S.V. (1998). Position and orientation of the globular domain of linker histone H5 on the nucleosome. *Nature* **395**, 402-405.

Clemons, W.M. Jr., Davies, C., White, S.W. and Ramakrishnan, V. (1998) Conformational variability of the N-terminal helix in the structure of ribosomal protein S15. *Structure* **6**, 429-438.

Davies C., Gerstner R.B., Draper D.E., Ramakrishnan V, White S.W. (1998). The crystal structure off ribosomal protein S4 reveals a two-domain molecule with an extensive RNA-binding surface: one domain shows structural homology to the ETS DNA-binding motif. *EMBO J*. **17**, 4545-4558.

Davies C., Bussiere D.E., Golden B.L., Porter S.J., Ramakrishnan V., White S.W. (1998). Ribosomal proteins S5 and L6: high-resolution crystal structures and roles in protein synthesis and antibiotic resistance. *J. Mol. Biol*. **279**, 873-888.

Ramakrishnan, V. (1997). Histone structure and the organization of the nucleosome. *Ann. Rev. Biophys. Biomol. Struct*. **26**, 83-112.

Ramakrishnan, V. (1997). Histone H1 and chromatin higher-order structure. *Crit. Rev. Eukaryotic Gene Expr*. **7**, 215-230.

Dutnall, R.N. and Ramakrishnan, V. (1997). Twists and turns of the nucleosome: tails without ends. *Structure* **5**, 1255-1260.

Wimberly, B.T., White, S.W. and Ramakrishnan, V. (1997). The structure of ribosomal protein S7 at 1.9 Å resolution reveals a β-hairpin motif that binds double-stranded nucleic acids. *Structure* **5**, 1197-1198.

Ramakrishnan, V. and Biou, V. (1997). Treatment of multiwavelength anomalous diffraction data as a special case of multiple isomorphous replacement. *Meth. Enzymol*. **276**, 538-557.

Davies, C., Ramakrishnan, V. and White, S.W. (1996). Structural Evidence for specific S8-RNA and S8-protein interactions within the 30S ribosomal subunit: ribosomal protein S8 from *Bacillus stearothermophilus* at 1.9 Å resolution. *Structure* **4**, 1093-1104.

Goytisolo, F.A., Gerchman, S.E., Yu, X., Rees, C., Graziano, V., Ramakrishnan, V. and Thomas, J.O. (1996). Identification of two DNA-binding sites on the globular domain of histone H5. *EMBO J*. **15**, 3421-3429.

Jayshree, T.N., Ramakrishnan, V. and White, S.W. (1996). Solution structure of prokaryotic ribosomal protein S17 by high resolution NMR spectroscopy. *Biochemistry* **35**, 2845-2853.

Davies C. , White S.W. and Ramakrishnan V. (1996). The crystal structure of ribosomal protein L14 reveals an important organizational component of the translational apparatus. *Structure* **4**, 55-66.

Hamiche, A., Schultz, P., Ramakrishnan, V., Oudet, P. and Prunell, A. (1996). Linker Histone-dependent DNA Structure in Linear Mononucleosomes *J. Mol. Biol.* **257**, 30-42.

Ramakrishnan, V. (1995). The Histone Fold: Evolutionary Questions. *Proc. Natl. Acad. Sci. USA* **92**, 11328-11330.

Biou, V., Shu, F. and Ramakrishnan, V. (1995). X-ray crystallography shows that translational initiation factor IF3 consists of two compact α/β domains linked by an α-helix. *EMBO J.* **14**, 4056-4064.

Ramakrishnan, V., Davies, C., Gerchman, S.E., Golden, B.L., Hoffmann, D.W., Jaishree, T.N., Kycia, J.H., Porter, S. and White, S.W. (1995). Structures of Prokaryotic Ribosomal Proteins: Implications for RNA-Binding and Evolution *Biochem. Cell Biol.* **73**, 979-986. (invited symposium paper).

Kycia, J.H., Biou, V., Shu, F., Gerchman, S.E., Graziano, V. and Ramakrishnan, V. (1995). Prokaryotic translation initiation factor IF3 is an elongated protein consisting of two crystallizable domains. *Biochemistry* **34**, 6183-6187.

Davies, C., Gerchman, S.E., Kycia, J.H., McGee, K., Ramakrishnan, V. and White, S.W. (1994). Crystallization and preliminary X-ray diffraction studies of bacterial ribosomal protein L14. *Acta Cryst* **D50**, 790-792.

Ramakrishnan, V. (1994). Histone structure. *Curr. Opin. Struc. Biol.* **4**, 44-50.

Graziano, V., Gerchman, S.E., Schneider, D. and Ramakrishnan, V. (1994). Histone H1 is located in the interior of the 30 nm filament. *Nature* **368**, 351-354.

Gerchman, S.E., Graziano, V. and Ramakrishnan, V. (1994). Expression of chicken linker histones in *E. coli*: Sources of problems and methods to overcome some of the difficulties. *Protein Expression and Purification* **5**, 242-251.

Cerf, C., Lippens, G., Ramakrishnan, V., Muyldermans, S., Segers, A., Wyns, L., Wodak, S.J. and Hallenga, K. (1994). Homo- and heteronuclear two-dimensional NMR studies of the globular domain of histone H1: full assignment, tertiary structure, and comparison with the globular domain of histone H5. *Biochemistry* **33**, 11079-11086.

Hoffmann, D.W., Davies, C., Gerchman, S.E., Kycia, J.H., Porter, S.J., White, S.W. and Ramakrishnan, V. (1994). Prokaryotic ribosomal protein L9: A bi-lobed RNA binding protein. *EMBO J.* **13**, 205-212.

Golden, B.L., Ramakrishnan, V. and White, S.W. (1993). Ribosomal protein L6: Structural evidence of gene duplication from a primitive RNA-binding protein. *EMBO J.* **12**, 4901-4908.

Golden, B.L., Hoffmann, D.W., Ramakrishnan, V. and White, S.W. (1993). Ribosomal protein S17:

Characterization of the three-dimensional structure by ^{1}H and ^{15}N-NMR. *Biochemistry* **32**, 12812-12820.

Cerf, C., Lippens, G., Muyldermans, S., Segers, A., Ramakrishnan, V., Wodak, S.J., Hallenga, K. and Wyns, L. (1993). Homo- and heteronuclear 2D NMR studies of the globular domain of H1: Sequential assignment and secondary structure. *Biochemistry* **32**, 11345-11351.

Ramakrishnan, V., Finch, J.T., Graziano, V., Lee, P.L. and Sweet, R.M. (1993). The crystal structure of the globular domain of histone H5 and its implications for nucleosome binding. *Nature* **362**, 219-223.

Ramakrishnan, V., Gerchman, S.E., Golden, B.L., Hoffmann, D.W., Kycia, J.H., Porter, S.J. and White, S.W. (1993). Structural studies on prokaryotic ribosomal proteins. In *The Translational Apparatus* (eds. K. Nierhaus, F. Franceschi, A.R. Subramanian, V.A. Erdmann, and B. Wittmann-Liebold), pp 533-544, Plenum Press, New York.

Ramakrishnan, V. and White, S.W. (1992). The structure of ribosomal protein S5 reveals sites of interaction with 16S rRNA. *Nature* **358**, 768-771.

Mangel, W.F., Lin, B. and Ramakrishnan, V. (1991). Conformation of one- and two-chain high molecular weight urokinase by small-angle neutron scattering and vacuum ultraviolet circular dichroism. *J. Biol. Chem.* **266**, 9408-9412.

Ramakrishnan, V., Patthy, L. and Mangel, W.F. (1991). Conformation of lys-plasminogen and kringle 1-3 fragment of plasminogen analyzed by small-angle neutron scattering. *Biochemistry* **30**, 3963-3969.

Gerchman, S.E. and Ramakrishnan, V. (1990). Cloning, sequencing and overexpression of genes for ribosomal proteins from *B. stearothermophilus*. *J. Biol. Chem.* **266**, 880-885.

Graziano, V., Gerchman, S.E., Wonacott, A.J., Sweet, R.M., Wells, J.R.E., White, S.W. and Ramakrishnan, V. (1990). Crystallization of the globular domain of histone H5. *J. Mol. Biol.* **212**, 253-257.

Graziano, V. and Ramakrishnan, V. (1990). Interaction of HMG14 with chromatin. *J. Mol. Biol.* **214**, 897-910.

Mangel, W.F., Lin, B.H. and Ramakrishnan, V. (1990). Characterization of an extremely large, ligand-induced conformational change in plasminogen. *Science* **248**, 69-73.

Ramakrishnan, V. (1990). Fundamentals of Neutron Scattering. In *Protein Structure and Engineering* (Jardetsky, O. and Niccolini, C. eds.), pp 49-60, Plenum Press, New York. (Invited talk at a NATO summer school in Erice, Italy, July 1989).

Graziano, V., Gerchman, S.E. and Ramakrishnan, V. (1988). Reconstitution of chromatin higher-order structure from histone H5 and depleted chromatin. *J. Mol. Biol.* **203**, 997-1007.

Capel, M.S. and Ramakrishnan, V. (1988). Neutron scattering topography of the proteins of the

small ribosomal subunit. *Methods in Enzymology*, **164**, 117-130.

Wignall, G.D., Christen, D.K., and Ramakrishnan, V. (1988). Instrumental resolution effects in small-angle neutron scattering. *J. Appl. Cryst.* **21**, 438-451.

Fisher, L.W., Melpolder, S.M., O'Reilly, J.M., Ramakrishnan, V. and Wignall, G.D. (1988). Neutron scattering from interfacially polymerized core-shell latexes. *J. Colloid Sci.* **123**, 24-34.

Gerchman, S.E. and Ramakrishnan, V. (1987). Chromatin higher-order structure studied by neutron scattering and scanning transmission electron microscopy. *Proc. Natl. Acad. Sci. (USA)* **84**, 7802-7807.

Capel, M.S., Engelman, D.M., Freeborn, B.R., Kjeldgaard, M., Langer, J.A., Ramakrishnan, V., Schindler, D.G., Schneider, D.K., Schoenborn, B.P., Sillers, I.-Y., Yabuki, S. and Moore, P.B. (1987). A complete mapping of the proteins in the small ribosomal subunit of *Escherichia coli*. *Science* **238**, 1403-1406.

Ramakrishnan, V. (1986). Distribution of protein and RNA in the 30S ribosomal subunit. *Science* **231**, 1562-1564.

Ramakrishnan, V., Graziano, V. and Capel, M. (1986). A role for proteins S3 and S14 in the 30S ribosomal subunit. *J. Biol. Chem.* **261**, 15049-15052.

Ramakrishnan, V. (1986). Scattering studies on ribosomes in solution. *Physica* **136B**, 232-235.

Schoenborn, B.P., Ramakrishnan, V. and Schneider, D. (1986). Hydrogen-deuterium exchange in structural biology. *Physica* **137B**, 214-222.

Ramakrishnan, V. (1985). A treatment of instrumental smearing effects in circularly symmetric small angle scattering. *J. Appl. Cryst.* **18**, 42-46.

Kagawa, Y., Yoshida, M., Kihara, H. and Ramakrishnan, V. (1985). Active site in proton translocating ATPase. In *Progress in Biiorganic Chemistry and Molecular Biology*, (Ovchinnikov, Y., ed.), pp 175-181, Elsevier Science Publishers, Amsterdam.

Wobbe, C.R., Mitra, S. and Ramakrishnan, V. (1984). The capsid structure of Kilham Rat Virus by small angle neutron scattering. *Biochemistry* **23**, 6565-6569.

Donnelly, M.I., Hartman, F.C. and Ramakrishnan, V. (1984) The shape of ribulose bisphosphate carboxylase/oxygenase in solution as inferred from small angle neutron scattering. *J. Biol. Chem.* **259**, 406-411.

Donnelly, M.I., Ramakrishnan, V., and Hartman, F.C. (1984). Chemical and physical characterization of the activation of ribulosebisphosphate carboxylase/oxygenase. In *Advances in Photosynthesis Research*, (Sybesma, C., ed.) Martinus Nijhoff/Dr. W. Junk Publishers, The Hague, Netherlands.

Moore, P.B., Engelman, D.M., Langer, J.A., Ramakrishnan, V., Schindler, D.G., Schoenborn, B.P.,

Sillers, I-Y. and Yabuki, S. (1984). Neutron Scattering and the 30S ribosomal subunit of *E. coli*. In *Neutrons in Biology* (B.P. Schoenborn, ed.), pp 73-92, Plenum Press, New York.

Ramakrishnan, V., Capel, M., Kjeldgaard, M., Engelman, D.M. and Moore, P.B. (1984). The positions of proteins S14, S18 and S20 in the 30S ribosomal subunit of *E. coli*. *J. Mol. Biol.* **174**, 265-284.

Uberbacher, E.C., Ramakrishnan, V., Olins, D.E., and Bunick G.J. (1983) Neutron scattering studies of nucleosome structure at low ionic strength. *Biochemistry* **22**, 4916-4923.

Ramakrishnan, V., Darszon, A. and Montal, M. (1982). A small angle X-ray scattering study of a rhodopsin-lipid complex in hexane. *J. Biol. Chem.* **258**, 4857-4860.

Ramakrishnan, V., Yabuki, S., Sillers, I.-Y., Schindler, D.G., Engelman, D.M., and Moore, P.B. (1981). Positions of proteins S6, S11 and S15 in the 30S ribosome of *E. coli*. *J. Mol. Biol.* **153**, 739-760.

Ramakrishnan, V. and Moore, P.B. (1981). The analysis of neutron distance data. *J. Mol. Biol.* **153**, 719-738.

Ramakrishnan, V., Darszon, A., Philipp, M. and Montal, M. (1980). Rhodopsin in model membranes: The kinetics of channel opening and closing in rhodopsin containing planar lipid bilayers. *Ann. N.Y. Academy of Sciences* **358**, 36-43.

Ramakrishnan, V. and Tanaka, T. (1977) Green's function theory of the ferroelectric phase transition in potassium dihydrogen phosphate. *Phys. Rev. B* **16**, 422-427.