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EDUCATION

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL 2007-2012
Ph.D. in Biochemistry, Specialization in Molecular and Cellular Biophysics

ANNA UNIVERSITY, CHENNAI, INDIA 2002-2006
Bachelor of Technology, Information Technology

ANNA UNIVERSITY, CHENNAI, INDIA 2001-2005
Bachelor of Technology, Industrial Biotechnology

AWARDS AND SCHOLARSHIPS

Biophysical Society Travel Award 2011
Molecular & Cellular Biophysics Graduate Research Fellowship 2007-2008

PROFESSIONAL EXPERIENCE

August 2007-present

Graduate Research Assistant, University of North Carolina School of Medicine, Chapel Hill, NC

Advisor: Dr. Nikolay V. Dokholyan

- Engineering allosteric modulation of protein function and thermostability (kinases, nucleotide binding domains)
- Elucidating structure-function relationships in ion-channels (CFTR, ENaC)
- Substrate recognition by molecular chaperones (HSP40s)
- Developing tools to assess and improve protein structural models: http://chiron.dokhlab.org

January-May 2007

Research Academic Visitor, Medical Research Council – Laboratory of Molecular Biology, Cambridge, UK

Advisors: Dr. Gebhard Schertler and Dr. Madan Babu Mohan

- Structural analysis of G-protein coupled receptors (Rhodopsin, β-Adrenoreceptor)

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PUBLICATIONS

1. **Kota, P.**, Garcia-Caballero, A., Dang, H., Stutts, M.J. and Dokholyan, N.V. "Energetic and Structural Basis for Activation of the Epithelial Sodium Channel by Channel Activating Protease-3", *Biochemistry, in press* (2012)
2. Aleksandrov, A.A., **Kota, P.,** Cui, L., Jensen, T., Alekseev, A.E., Reyes, S., He, L., Gentzsch, M., Aleksandrov, L.A., Dokholyan, N.V. and Riordan, J.R. "Allosteric modulation balances thermodynamic stability and restores function of DelF508 CFTR", *Journal of Molecular Biology,* **419**: 41-60 (2012)
3. Pulicherla, N., **Kota, P.,** Dokholyan, N.V. and Asokan, A. "Intra- and inter-subunit disulfide bond formation is nonessential in adeno-associated viral capsids", *PLoS ONE,* **7**:e32163 (2012)
4. Gyimesi G., Ramachandran S., **Kota P.**, Dokholyan N. V., Sarkadi, B., Hegedus T., "ATP hydrolysis at one of the two sites in ABC transporters initiates transport related conformational transitions" *Biochimica et Biophysica Acta-Biomembranes,* **1808**: 2954-2964 (2011)
5. **Kota, P.***, Ding, F.*, Ramachandran, S.* and Dokholyan, N.V. "Gaia: automated assessment of protein structure quality", *Bioinformatics*, **27**: 2209-2215 (2011)
6. Ramachandran, S.*****, **Kota, P.*,** Ding, F. and Dokholyan, N.V. "Automated minimization of steric clashes in protein structures", *Proteins: Structure, Function and Bioinformatics*, **79**: 261-270 (2011)
7. Karginov, A. V., Zou, Y., Shirvanyants, D., **Kota, P.**, Dokholyan, N. V., Young, D. D., Hahn, K. M., and Deiters, A. "Light regulation of protein dimerization and kinase activity in living cells using photocaged rapamycin and engineered FKBP", *Journal of the American Chemical Society*, **133**: 420-423, (2011)
8. **Kota, P.** and Dokholyan N.V. "Approaches for probing the sequence space of substrates recognized by molecular chaperones", *Methods*, **53**: 318-324 (2011)
9. Aleksandrov, A.A., **Kota, P.,** Aleksandrova, L.A., He, L., Jensen, T., Cui, L., Gentzsch, M., Dokholyan, N.V. and Riordan, J.R. "Regulatory insertion removal restores maturation, stability and function of ΔF508 CFTR.", Journal of Molecular Biology, **401**: 194-210 (2010)
10. Karginov, A., Ding, F., **Kota, P.,** Dokholyan, N.V. and Hahn, K. "Engineered allosteric activation of kinases in living cells", Nature Biotechnology, **28**: 743-748 (2010)
11. Gaillard, E., **Kota, P.,** Gentzsch, M., Dokholyan, N.V., Stutts, M.J. and Tarran, R. "The regulation of epithelial Na^+ channel and airway surface liquid volume by extracellular proteases", Pflugers Archives – European Journal of Physiology, **460**: 1-17 (2010)
12. **Kota, P.,** Summers, D. W., Ren, H-Y., Cyr, D. M. and Dokholyan, N. V. "Identification of a consensus motif in substrates bound by a type I Hsp40", Proceedings of the National Academy of Sciences, USA **106**: 11073-11078 (2009)
13. **Kota, P.** "GUIMACS – a Java based front end for GROMACS", In Silico Biology **1**: 95-

99 (2007)

BOOK CHAPTERS

1. Chong, P.A., **Kota, P.,** Dokholyan, N.V. and Forman-Kay, J.D. "Dynamics intrinsic to CFTR function and stability." in "Cystic Fibrosis: Molecular Basis, Physiological Changes, and Therapeutic strategies.", *in press*, Editors: Riordan, J.R., Boucher, R.C., and Quinton, P.M. Cold Spring Harbor Press, (2011)

WORK IN PROGRESS

1. **Kota, P.,** Aleksandrov, A.A., He, L., Riordan, J. R. and Dokholyan, N.V. "Uncovering and Redesigning Allosteric Coupling Networks in Proteins", *submitted* (2012)
2. Hudson, N.E., **Kota, P.,** Ding, F., Gorkun, O.V., O'Brien III, E.T., Lord, S.T., Superfine, R., Dokholyan, N.V. and Falvo, M.R. "Structure and stability of a novel beta-helix within the fibrin(ogen) alphaC region", *submitted* (2011)

* Equal contribution

PRESENTATIONS

TALKS

1. **Kota, P.,** Gentzsch, M., Boucher, R. C., Stutts, M. J. and Dokholyan, N. V. "Subunit stoichiometry of the epithelial sodium channel and its implication on channel function" Science in Progress Seminar Series, Department of Biochemistry and Biophysics, University of North Carolina, Chapel Hill, NC. (*Scheduled: 26, January 2012*)
2. **Kota, P.,** García-Caballero, A., Dang, H., Stutts, M. J. and Dokholyan, N.V. "Energetic and Structural Basis for Activation of ENaC by Channel Activating Protease-3", 7th International Symposium on Aldosterone and the ENaC/Degenerin Family of Ion Channels: Molecular Mechanisms and Pathophysiology, Sep 18-22, 2011; Asilomar, CA.
3. **Kota, P.,** Aleksandrov, A., He, L., Riordan, J.R. and Dokholyan, N.V. "Dynamic coupling within NBD1 influences the thermostability of CFTR", Summer Seminar Series, 28 March 2011, University of North Carolina, Chapel Hill, NC.
4. Karginov, A. V., Ding, F., **Kota, P.**, Dokholyan, N. V., and Hahn, K. M. "Engineered allosteric activation of kinases in living cells", 55th Annual Meeting, Biophysical Society, Mar 5-9, 2011; Baltimore, MD.

POSTERS

1. **Kota, P.,** Aleksandrov, A.A., He, L., Riordan, J.R. and Dokholyan, N.V. "Dynamic coupling within NBD1 influences the thermostability and function of CFTR", 25th Annual North American Cystic Fibrosis Conference, Nov 3-5; Anaheim, CA.

2. **Kota, P.,** Aleksandrov, A.A., He, L., Riordan, J.R. and Dokholyan, N.V. "Dynamic coupling within NBD1 influences the thermostability and function of CFTR", National Graduate Student Research Conference, Oct 17,18; Bethesda, MD.
3. Karginov, A. V., Ding, F., **Kota, P.**, Dokholyan, N. V. and Hahn, K. M. "Engineered allosteric activation of kinases in living cells", Research Retreat 2011, Department of Biochemistry and Biophysics, UNC Chapel Hill, NC.
4. **Kota, P.,** Summers, D. W., Ren, H-Y., Cyr, D. M. and Dokholyan, N. V. "Identification of a consensus motif in substrates bound by a type I Hsp40", From Computational Biophysics to Systems Biology, June 5-8, 2010; Traverse City, MI.
5. **Kota, P.,** Summers, D. W., Ren, H-Y., Cyr, D. M. and Dokholyan, N. V. "Identification of a consensus motif in substrates bound by a type I Hsp40", 54th Annual Meeting, Biophysical Society, Feb 20-24, 2010; San Francisco, CA.

SCIENTIFIC SERVICES

1. F1000 Associate Faculty Member 2010-present
2. Reviewer for Proteins: Structure, Function and Bioinformatics 2008- 2009

At UNC

1. Mentored an undergraduate student in summer biophysics program in developing tools for RNA folding 2010
2. Mentored an undergraduate student in summer biophysics program in understanding molecular interactions of cytoskeletal proteins 2010
3. Teaching Assistant, Biophysics Fall Module 2008

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REFERENCES

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