

XIN CHEN PhD

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STATUS: permanent resident (Green card holder)

SUMMARY

Data scientist with specialization in statistics, machine learning, mathematical modeling, bioinformatics. Expertise in processing large scale dataset (e.g. NGS data), building quantitative models to describe complicated systems and mining meaningful patterns and information from complexed datasets (structured, semi-structured and unstructured). Effective communicator that have presented my research projects to audiences with varied background. Experienced in managing multiple projects with different collaborators simultaneously. Passionate about new ideas and learning new skills.

EXPERIENCE

- Current-Mar, 2015 Computational biologist (postdoc), Dartmouth College, US
- Build pipelines to process next generation sequencing datasets from multiple platforms
 - Design database for the features of microbe communities
 - Analyze the microbe communities by detecting the correlations of taxonomy and functional genes and classifying the communities using clustering methods
 - Examine the potential correlation of genomic methylation and gene expressions
 - Design quantitative models to describe and simulate a special bacteria-phage interaction system
 - Visualize and report the results of analyses and interpret to collaborates
 - Mentor undergraduate and graduate students
- Dec, 2014-Sep, 2009 Computational biologist (PhD program), Graduate Center, CUNY, US
- Build predictive models for multivariable datasets to determine the key factors and potential correlations with the pattern of species diversifications
 - Use principle component analysis to reduce the high dimensional data and detect the potential clusters
 - Use Bayesian methods, likelihood ratio test, AIC, BIC for model selection
 - Phylogenetic analysis
- Dec, 2014-Sep, 2009 Adjunct lecturer, College of Staten Island, CUNY, US
- General Biology Lab (Bio 171)
 - Introduction Biology Lab (Bio 107)
 - Evolution (Bio 322)

EDUCATION

May, 2016	Bioinformatics (RNASeq data analysis) workshop, San Juan, Puerto Rico.
Sep, 2009-Dec, 2014	PhD, The City University of New York, NY Program: Biology Major: Computational Biology Thesis: Integrating phylogenomics, biogeography and systematics to explore the taxonomy and the rise of the ratsnakes Advisor: Dr. Frank T. Burbrink
June, 2013	NSF Next-generation Sequencing Data for Phylogenetics and Phylogeography workshop at NESCent, Durham, NC
June, 2012	NSF Macroevolutionary methods in R workshop, Santa Barbara, CA
2006-2009	Master of Science, Sichuan University, China Major: Zoology Thesis: The Anatomy of Mountain Stream Hynobiid (<i>Batrachuperus pinchonii</i>) Advisor: Professor Ermi Zhao
2002-2006	Bachelor of Science, Sichuan University, China Major: Biotechnology Lab internship: Cloning and function identification of anti-ultraviolet radiation and DNA repairing enzyme genes in <i>Dunaliella salina</i> Supervisor: Dr. Yi Cao

SKILLS

Statistics	hypothesis testing and confidence intervals, regression models, principal component analysis
Machine learning	regression, clustering, Bayesian, dimensionality reduction
Mathematical modeling	ordinary differential equation (ODE) system, stochastic simulation
Programming languages and software	R, Python (Pandas, NumPy, SciPy, Biopython, Scikit), C, MySQL, CLC Genomics Workbench, SAMtools, MATLAB, Java, Unix/Linux, Cloud computing
Biology	molecular biology, genomics, microbiology, population genetics, ecology, evolution
Selected Coursework	Calculus, Linear Algebra, Probability and Statistics, Hadoop fundamentals, Data Analysis on Hadoop
Others	LaTeX, regular expression, markdown, JavaScript, Perl, CIRCOS, D3, scientific writing and presenting, Microsoft Excel, Adobe Illustrator, Adobe Photoshop, Chinese

PUBLICATIONS

Xin Chen, Alan R. Lemmon, Emily Moriarty Lemmon, R. Alexander Pyron, Frank T. Burbrink. (2016) Temporal and spatial dynamics of species diversification reveal the processes of diversification in global ratsnakes using high-throughput sequence data. (Under review)

Yuan, Z., W. Zhou*, **X. Chen***, N.A. Poyarkov Jr., H. Chen, N. Jang-Liaw, W. Chou, N. J. Matzke, K. Iizuka, M. Min, S.L. Kuzmin, Y. Zhang, D.C. Cannatella, D.M. Hillis, J. Che. (2016) Spatiotemporal Diversification of the True Frogs (Genus *Rana*): An Historical Framework for a Widely Studied Group of Model Organisms. Systematic Biology. (accepted)

*equal first author

Peng, G., Q. Liu, F. Zhu; G. Zhong, **X. Chen**, E.A. Myers, L. Zhang, T. Ziegler, T. Nguyen, F. T. Burbrink. 2016. Molecular phylogeography reveals west-east diversification in Stejneger's pitviper *Viridovipera stejnegeri* (Schmidt, 1925) (Reptilia: Serpentes: Viperidae). Molecular Ecology, 25, 2920-2936.

Fei Zhu, Qin Liu, Liang Zhang, **Xin Chen**, Fang Yan, Robert Murphy, Cong Guo, Peng Guo. (2016) Molecular phylogeography of white-lipped tree viper (*Trimeresurus*; Viperidae), Zoologica Scripta, 45, 252-262.

Kai He, Nai-Qing Hu, **Xin Chen**, Jia-Tang Li and Xue-Long Jiang. (2016) Interglacial refugia preserved high genetic diversity of the Chinese mole shrew in the mountains of southwest China. Heredity, 116, 23-32.

Eliana F. Oliveira, Marcelo Gehara, Vinicius A. S o Pedro, **Xin Chen**, Edward A. Myers, Frank T. Burbrink, Daniel O. Mesquita, Adrian A. Garda, Guarino R. Colli, Miguel T. Rodrigues, Federico J. Arias, Hussam Zaher, Rodrigo M. L. Santos and Gabriel C. Costa. (2015) Speciation with gene flow in whiptail lizards from a Neotropical xeric biome. Molecular Ecology, 24, 5957-5975.

Chen, X., A. D. McKelvy, L. L. Grismer, M. Matsui, K. Nishikawa and F. T. Burbrink. (2014) The phylogenetic position and taxonomic status of the Rainbow Tree Snake *Gonyophis margaritatus* (Peters, 1871) (Squamata: colubridae). Zootaxa, 3881, 532-548.

Chen, X., Jiang, K., Guo, P., Huang, S., Rao, D., Ding, L., Takeuchi, H., Che, J., Zhang, Y., Myers, E. A. and F.T, Burbrink. (2014) Assessing species boundaries and the phylogenetic position of the rare Szechwan ratsnake, *Euprepophis perlaceus* (Serpentes: Colubridae), using coalescent-based methods. Molecular Phylogenetics and Evolution, 70, 130-136.

Chen, X., Huang, S., Guo, P., Colli, G.R., Nieto Montes de Oca, A., Vitt, L.J., Pyron, R.A. and Burbrink, F.T. (2013) Understanding the formation of ancient intertropical disjunct distributions using asian and neotropical hinged-teeth snakes (*Sibynophis* and *Scaphiodontophis*: Serpentes: Colubridae). Molecular Phylogenetics and Evolution, 66, 254-261.

Burbrink, F.T., **Chen, X.**, Myers, E.A., Brandley, M.C. and Pyron, R.A. (2012) Evidence for determinism in species diversification and contingency in phenotypic evolution during adaptive radiation. Proceedings of the Royal Society B: Biological Sciences, 279, 4817-4826.

Song Huang, Li Ding, Frank T. Burbrink, Jun Yang, Jietang Huang, Chen Lin, **Xin Chen**, Yaping Zhang. (2012) A New Species of the Genus *Elaphe* (Squamata: Colubridae) from Zoige County, Sichuan, China. Asian Herpetological Research, 3, 38-45.

Guo, P., C. Li, A. Malhotra, Q. Liu, **X. Chen**, K. Jiang, Y. Wang. (2011) Molecular Phylogeography of Jerdon's Pit Viper *Protobothrops jerdonii* (Günther, 1875): Importance of the Tibetan Plateau Uplift. Journal of Biogeography, 38, 2326-2336.

Wu, Y. K., Y. Z. Wang, K. Jiang, **X. Chen**, J. Hanken. (2009) Homoplastic Evolution of External Coloration in Asian Stout Newts (*Pachytriton*) Inferred from Molecular Phylogeny. Zoologica Scripta, 39, 9-22.

Chen, X., H. Chen, E. M. Zhao. (2009) Anatomy of Head Muscles of *Batrachuperus pinchonii*. Sichuan Journal of Zoology, Sichuan. Vol. 28 No. 3: 417-421.

Chen, X., H. Chen, E. M. Zhao. (2009) Anatomy of the Digestive and Respiratory Systems of *Batrachuperus pinchonii*. Sichuan Journal of Zoology, Sichuan. Vol.28 No. 4: 565-568.

Chen, X., E. M. Zhao. (2007) Research on Lepidosis Variation of *Sphenomorphus indicus*. Sichuan Journal of Zoology, Sichuan. Vol. 26 No. 2: 392-394.

PRESENTATIONS

Chen, X., M. Ouellette, A.M. Makkay, A. Ventosa, R.T. Papke, O. Zhaxybayeva. (July 2016) Consumption of environmental DNA in hypersaline environments. Astrobiology Graduate Conference 2016, Boulder, CO.

Chen, X., O. Zhaxybayeva. (June 2016) Could gene transfer agent still be a selfish genetic element? The 22nd annual Boston Bacterial Meeting.

Chen, X., M. Ouellette, A.M. Makkay, A. Ventosa, R.T. Papke, O. Zhaxybayeva. (May 2016) Biased extracellular DNA consumption by the archaeon *Haloferax volcanii*. Halophiles 2016, San Juan, Puerto Rico.

Chen, X., O. Zhaxybayeva. (Feb 2016) Could gene transfer agent still be a selfish genetic element? Microbiology and Molecular Pathogenesis Program (M2P2) Retreat, Dartmouth College.

Burbrink, F.T., **X. Chen**. (Aug 2015) Estimating species tree phylogenies from 100s of loci and predicting community structure of snakes on eastern Nearctic islands. Society for the Study of Amphibians and Reptiles 2015 University of Kansas Meeting.

Irene Feng, **Xin Chen**, Olga Zhaxybayeva. (May 2015) Bacterial DNA modification in response to temperature fluctuations. The 24th Annual Karen E. Wetterhahn Science Research Symposium, Dartmouth College, Hanover, NH.

Chen, X., F.T. Burbrink. (June 2014) Exploring the origins and diversification of ratsnakes using anchored hybrid enrichment to generate 100s of loci for species tree estimation. The Evolution 2014 Conference, Raleigh, NC.

Xin Chen. (Aug 2013) The Causes of Replicated Adaptive Radiations in Ratesnakes. Invited talk, Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu, China.

Chen, X., F.T. Burbrink. (Aug 2012) Processes of morphological and ecological trait diversification in globally distributed ratsnakes. World Congress of Herpetology, Vancouver, Canada.

Chen, X., F.T. Burbrink. (June 2011) Patterns of Morphological and Ecological Evolution in Rapidly Diversifying Ratsnakes Across the Globe. The Evolution 2011 Conference, Norman, Oklahoma.

Chen, X., F.T. Burbrink. (Aug 2010) Patterns of Diversification in Old World Ratsnakes. Doctoral Science Student Orientation 2010, Graduate Center, The City College of New York.

Chen, X., F.T. Burbrink. (July 2010) Patterns of Diversification in Old World Ratsnakes. Joint Meeting of Ichthyologists and Herpetologists, Providence, Rhode Island.

Chen, X., E.M. Zhao. (Nov 2008) Anatomy of the Skeletal System of *Batrachuperus pinchonii* (David, 1871[1872]) (Caudata: Hynobiidae). Conference on Conservation and Captive Breeding of Chinese Amphibians and Reptiles, Hainan, China.

GRANTS AND AWARDS

2016 Astrobiology Graduate Conference. (full funding invitation)

2016 NSF Young Investigator Travel Grants. (\$800)

2013-2014 CUNY Graduate Center Doctoral Student Research Grant (\$1200)

2012 NSF Macroevolutionary Methods in R Workshop, Santa Barbara, CA (full funding to attend)

2010-2011 CUNY Graduate Center Doctoral Student Research Grant (\$1500)

2012 CUNY Graduate Center Student Travel Grant (\$300)

2009-2014 Science Fellowship, CUNY Graduate Center (\$24,000/year)

2006-2007 Sichuan University, China, Excellent graduate student scholarship I

2004-2005 Sichuan University, China, Excellent study undergraduate scholarship I

2003 Sichuan University, China, Excellent study undergraduate scholarship III

REVIEWER EXPERIENCE

Italian Journal of Zoology

Sichuan Journal of Zoology

Zoological Research

EXTRACURRICULAR ACTIVITIES

volunteer during 2002-2009 in Sichuan University Environmental Student Association, Conservation International, WWF, Jane Goodall's Roots and Shoots, Chengdu Bird Watching Society

wildlife survey

reading, programming, bird watching, photography, jogging, hiking, biking