POSITION OPEN

Department of Biochemistry & Molecular Biology
Oklahoma State University

Position: Postdoctoral Research Fellow (Bioinformatics)

Field of Research: Plant Biology, Genomics, Bioinformatics, Computer Science or highly-related field.

Project Description: The Kaundal Bioinformatics Lab (http://bic.okstate.edu/) at the National Institute for Microbial Forensics & Food and Agricultural Biosecurity (NIMFFAB), Oklahoma State University (OSU), is inviting applications for a Postdoctoral Research Fellow under the recently awarded grant to investigate the mechanisms of Plant-Microbe interactions on a genome scale. The project, entitled "***i*PMNET: a Bioinformatics System for Predicting Genome-wide Plant-Microbe interactions Network**" will address the mechanisms of pathogenesis on a genome-scale (e.g. comparative analysis of multiple host-pathogen Protein Interaction Networks (PINs) that may allow us to identify conserved mechanisms of pathogen cellular invasion), and (ii) provide bioinformatics solutions / tools to visualize such PINs in a user-friendly way.

Appointment Period: Initial 1 year with a 1 year extension contingent upon performance. Appointment extension after 2 years is contingent on performance and available funding.

Principal Responsibilities: The successful candidate will join the laboratory of Dr. Rakesh Kaundal to develop systems bioinformatics approaches to decipher plant host-pathogen interaction networks. The postdoc will focus on system and data integration, algorithm development and computational modeling of the interactions among pathogen proteins and host proteins using diverse data types or properties. Specific responsibilities include: (i) Generate a series of data types / protein features from intra- and inter-species Protein-Protein Interactions (PPIs) for *Arabidopsis thaliana-Pseudomonas syringae* interaction system, (ii) Develop a Bayesian network from these properties and generate a decision layer, (iii) Validate the performances on experimentally-proved independent datasets, (iv) Implement *i*PMNET - a publically available web server for predicting and visualizing the *A. thaliana-P. syringae* PINs. In addition, the candidate is also expected to explore the applicability of this tool on agronomically relevant host-pathogen interaction systems.

Qualifications:
1. Ph.D. degree in Biology, Computer Science, Engineering, or related life sciences field.
2. Programming skills with Java, C/C^{++}, or Perl, and efficiency in Linux / UNIX operating systems.
3. Independent problem solving skills.
4. Have good communication skills, strong team-work spirit, and self-learning abilities.

Preferred Qualifications:
1. Ph.D. degree in Plant Biology, Genomics, Bioinformatics, Computer Science or highly-related field.
2. Experience in developing Bayesian-based models and large-scale data analysis systems.
3. Knowledge about PINs, graphical models such as the dynamic Bayesian networks.

Application Process: Please provide a current CV, a brief statement of your research interests, and contact information for at least three references who can address your skills and abilities in science, and submit materials directly to the Principal Investigator, Dr. Rakesh Kaundal at r.kaundal@okstate.edu or mail your application package to:

Department of Biochemistry & Molecular Biology
246B Noble Research Center
Oklahoma State University
Stillwater, OK, 74078
Tel: 405-744-6189
Fax: 405-744-7799
Web: http://biochemistry.okstate.edu/