position description

Date: December 2020

Title: Senior Research Associate Specialized Technical Skills (STS) - Bioinformatics

Department: Genetics and Genome Science Department

School or Management Center: CWRU School of Medicine

Location: Biomedical Research Building

Supervisor Name and Title: Dr. Berkley E. Gryder, Assistant Professor Case Western Reserve University, Department of Genetics & Genome Sciences, and the Case Comprehensive Cancer Center. Associate Member, Adolescent and Young Adult transdisciplinary scientific initiative.

POSITION OBJECTIVE

The Senior Research Associate Specialized Technical Skills (STS) – Bioinformatician will work in the areas of Bioinformatics, Data Visualization, Integrated Epigenomic Analytics. The Senior Research Associate will make critical choices that co-direct the investment of resources, and will implement a future-looking, state of the art informatic ecosystem that will support a high-volume of collaborative (and multi-institutional) analytical output. With Dr. Gryder's guidance, they will lead the data analysis, software design, algorithm design, and data visualization. The position will require experience with writing, reviewing and maintaining organized code, software tools, pipelines and scripts. The ideal candidate will enjoy exploring the epigenome intellectually, develop new algorithms/pipelines, incorporating genome-wide machine learning, and training/teaching Case Western students and research volunteers to do the same. The Senior Research Associate will be immersed in research project design, bioinformatic experimentation, data visualization to illustrate new findings in manuscripts, and will contribute our insights to the larger scientific community studying genomics/gene regulation via manuscripts, lectures, videos and conference presentations. The Senior Research Associate will support the team by providing analysis figures needed for submission of grant applications. In addition, they will directly manage students and volunteers through training and coaching them to utilize code to gain insight into epigenomic/transcriptomic/proteomic datasets, and will advise/assist students in writing up their results for publication to advance their careers. The Senior Research Associate will regularly review the literature to stay informed of new tools, new trends and new ideas emerging in the field of gene regulation. They will enhance the international reputation of Case Western by inspiring paradigm shifts and providing in-demand software that enhances the field, and will accomplish this via conference presentations, a well documented Github repository, and publications. The Senior Research Associate will be a vital contributor to multiple data-driven projects in parallel, and will manage next-generation sequencing data (ChIP-seq, RNA-seq, HiC, CUTandRUN, CUTandTag, HiChIP, etc) generated from the Gryder lab and/or local/national/international collaborators. They will also harness publicly available transcriptomic and epigenomic datasets, integrating them with the smaller datasets generated internally to draw stronger comparisons and to enhance key scientific findings.

ESSENTIAL FUNCTIONS

1. Develop and implement software for interrogating epigenomic data (of diverse types) via analysis, visualization, correlation, heatmaps representation, peak detection, interaction maps, dimensionality reduction, gene-set associations, and machine learning to make inroads on the relationship between non-coding regulatory sequences and gene expression activity. Develop and maintain a data/code ecosystem that will be used by undergraduates, Ph.D. students, M.D./Ph.D. students and research volunteers. Add new features to existing code structures (R, Python, Perl, shell scripting, others). (50%)

2. Critically review scientific literature relevant to 3D genome organization, gene regulation, and emerging advances in bioinformatic methods. Establish and maintain a working knowledge of publicly available datasets, and downloading/integrating them where useful. Evaluate the software tools produced by other laboratories in the field (and, when deemed useful, integrate such new tools into the Gryder lab code-ecosystem). Develop a working knowledge of the "state of the art" to gain keen insight into "gaps" in the field of epigenetics ripe for innovation and opportunity. Deepen literature knowledge continually to maximize the novelty of ongoing projects, to make decisive choices to prioritize the most impactful lines of investigation. (20%)

3. Participate in the preparation of grant applications, written reports/manuscripts and public presentations summarizing key new findings, including detailed description of bioinformatics methods and synthesis of conclusions from summary tables. Write and prepare research reports and grant applications, including internal documentation, Github documentation, academic publication, and scientific presentations (includes sharing in the rewards and responsibilities of authorship). (15%)

4. Manage and train students, volunteers, and collaborators to become effective, independent data-explorers on our bioinformatic platform. Establish in-house curriculum (video tutorials, recorded interactively) that allow for rapid training of Gryder lab members, and visiting scholars from collaborator labs. Accurately estimate developer timelines and resources needed to meet objectives. (15%)

NONESSENTIAL FUNCTIONS

Perform other duties as assigned.

CONTACTS

Department: On-going interaction with principal investigators, faculty, and staff.

University: Frequent interaction with other school and department principal investigators, faculty, staff, and central Information Technology Services, and Technology Transfer.

External: Regular contact with faculty and staff at collaborator institutions, domestic and international, on collaborative projects.

Students: Regular contact with students and volunteers to maintain workflow, address concerns or make adjustments.

SUPERVISORY RESPONSIBILITY

Supervisory responsibility for students/trainees and volunteers.

QUALIFICATIONS

Experience: Minimum of 4 years of experience with bioinformatics, data visualization, and software development, is required. Proficiency in Python, Javascript, and willingness to learn new academic software packages as needed, is also required. Familiarity with Postgres/SQL and DBM such as Django and experience managing large databases, and full stack web development are a plus. At least 3 years experience leading teams and organizing software projects is preferred.

Education/Licensing: PhD degree in Bioinformatics, Computational Biology or related field or equivalent experience is required.

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REQUIRED SKILLS

1. Working knowledge of genomics, mapping and analysis of next-generation sequencing data, visualizing data, performing genome-wide comparisons to generate/test biological hypotheses related to epigenetic mechanisms of gene control.

2. Exhibits excellent software creation skills, and employs the following principles to their code: Organized (having an intuitive system for all files, and their relation to each other, to allow rapid and unencumbered data access); Flexible (the pipeline ought to be stable even when new additions or changes are introduced); Scalable (pipelines and data-structure are built with fore-thought to ever-increasing sample numbers to be incorporated over time); Efficient (redundant task or files are eliminated and prevented, where ever possible, given the limitations of computational bandwidth and storage space); Automated Intelligently (once a task is clear, ensure consistency by removing the need for manual command execution); Clear and Reproducible (well-documented, clear connectivity among all bioinformatic tasks and datasets; version-controlled to monitor, report, and debug as needed).

3. Highly organized, with the initiative, and technical aptitude to work with limited supervision.

4. Excellent interpersonal skills and a demonstrated expertise in team-oriented environments.

5. Good problem solving and decision-making skills.

6. Excellent verbal and written communication skills.

7. Demonstrated willingness to be hands-on and proactive and self motivated.

8. Proficient in statistical programming and data management environments such as R/Python/Perl with the aptitude to learn.

9. Knowledge and application of advanced algorithms such as

10. Ability to multitask, work independently, and set own priorities, while maintaining accuracy and attention to details.

11. Ability to work effectively with internal and external colleagues and collaborators.

WORKING CONDITIONS

Normal office environment and equipment are available, and remote access for telework will be provided as suits the needs of the position and the productivity/safety of the scientists in the lab.

DIVERSITY STATEMENT

In employment, as in education, Case Western Reserve University is committed to Equal Opportunity and Diversity. Women, veterans, members of underrepresented minority groups, and individuals with disabilities are encouraged to apply.

HOW TO APPLY:

Qualified applicants should send their CV and contact information for 3 or more references to berkley.gryder@case.edu

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