

position description

Date: April 2022

Title: Research Associate

Department: Genetics and Genome Sciences

School: Medicine

Location: BRB 709

Supervisor Name and Title: Craig Hodges, Associate Professor and Director of the Cystic Fibrosis Mouse Resource Center

Please email your CV/Resume to: craig.hodges@case.edu

POSITION OBJECTIVE

The Research Associate will design and implement high impact research projects on cystic fibrosis (CF) with translational goals. The projects will not only elucidate the basic biology of the gene affected in CF (CFTR) but also design novel approaches to correct the gene or gene product on a genetic or pharmacologic level. These projects will involve both mutation specific and mutation agnostic approaches. These projects will utilize various CF mouse strains, mouse primary cells and human primary cells. These projects will involve the treatment of mice or cells with various genome editing technologies as well as combination of candidate compounds. After genetic or pharmacologic correction of mice or cells, downstream assessment of CFTR function will be completed by various assays including DNA/RNA/protein quantification, cell assays specific for CFTR function which will include tissue culture, electrophysiological assessment of CFTR in the mouse in vivo and ex vivo. In addition, behavioral changes of the mice before and after CFTR correction will be assessed through standard behavioral assessments. A strong background in mouse behavior assessment is required. Last, the research associate will work with the CF mouse resource center (CFMRC) to increase productivity for breeding, genotyping and workflow to improve the CFMRC efficiency. This position will work with mice on a daily basis.

ESSENTIAL FUNCTIONS

1. Maintain and manage a large mouse colony that carries genetic mutations for CF. This would include keeping accurate records of breeding, births, weaning and genotypes. Use of software tracking such as softmouse and iLab are required. (20%)
2. Design and implement gene editing experiments in vivo or in vitro using various gene editing technologies. Carrying out CFTR function assessment through electrophysiological assays in vivo or ex vivo as well as cell based assays will be required. This would also include assisting with IACUC (institutional animal care and use committee) and IBC (institutional biosafety committee) applications (10%).
3. Design and implement pharmacologic correction of CFTR experiments in vivo or in vitro using various candidate compounds. Carrying out CFTR function assessment through electrophysiological assays in vivo or ex vivo as well as cell based assays will be required. This

Research Associate

would also include assisting with IACUC (institutional animal care and use committee) and IBC (institutional biosafety committee) applications (10%).

4. Perform behavioral characterization of various CF mouse strains before and after CFTR correction. This will include performing established assessments such as depression and sleep assays but will also include establishing new behavior assessments. (10%).
5. RA will collect data using appropriate laboratory machines designed for performing cell biological and molecular analysis. Data will involve images and numbers, which will be analyzed by appropriate statistical packages. Familiarity with Excel and Graphpad and powerpoint are an advantage. (10%).
6. Design and implement experiments to delineate cellular pathways regulated by the presence or absence of CFTR including performing Western blot, qRTPCR and RNA-seq (10%)
7. Mentor graduate, undergraduate students as well as research assistant (5%)
8. Maintain certain facilities and equipment including animal resource rooms, cell culture rooms along with advanced thermal cyclers for quantitative gene expression analysis, plate readers etc. Assist in overseeing supply inventory and ordering. Maintain chemical and biological inventories. (5%)
9. Collaborates with faculty members and scientists in training in the performance and analysis of complex and advanced research studies. (5%)
10. Participate in meetings to present research study findings. (5%)
11. Maintain research related materials to include study data, publications, submitted grants and other scientific documents. Maintains laboratory databases. (5%)
12. Collaborate with PI in the preparation of manuscripts and grants. (5%)

NONESSENTIAL FUNCTIONS

Perform other duties as assigned.

CONTACTS

Department: Daily contact with principal investigators, postdocs, research associates, research assistants and graduate students to review cell and mouse needs or organize research interactions between different research teams in the department.

University: Daily contact with principal investigators, postdocs, research associates, research assistants, graduate students outside department. The supervisor has many internal collaborations in the university, which will be facilitated by the research associate.

External: Weekly contact with external principal investigators, postdocs, research associates, research assistants, graduate students outside the university. The supervisor has many collaborations external to the university, which will be facilitated by the research associate.

Students: Daily contact with graduate students and fellows to facilitate their research and ensure an efficient work environment.

SUPERVISORY RESPONSIBILITY

Supervise graduate and undergraduate students as well as research assistants. Provide technical assistance and help to trouble shoot research problems.

QUALIFICATIONS

Experience: Position requires a minimum of 3 years of experience in CF and CF mouse research.

Education/Licensing: A PhD in biological science.

REQUIRED KNOWLEDGE, SKILLS and ABILITIES

1. Excellent oral and written communication skills and interpersonal skills; must demonstrate the ability to effectively and professionally communicate and work with various individuals within and external to the University.
2. Strong organization skills; ability to multi-task, prioritize and meet deadlines. Must demonstrate attention to detail and accuracy, time management skills, and follow-through. Must be able to work under pressure and conform to shifting priorities, demands and timeline.
3. Ability to work effectively independently and collaboratively within a team. Must be highly motivated, responsible, dependable and a self-starter.
4. Effective problem-solving skills; must demonstrate innovation and creativity, excellent analytical skills, sound judgment and good decision-making.
5. Prior experience in cell biology, genetics, molecular biology and animal behavioral techniques and analysis is required.
6. Advanced computer proficiency in Microsoft Suite and graphpad.

WORKING CONDITIONS

General laboratory environment. May have exposure to hazards. Mostly working with mice. May be required to lift up to 40 pounds at a time infrequently. May have repetitive motion with hands if doing genotyping.

Case's animal facilities are accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) and is managed according to the "Guide for the Care and Use of Laboratory Animals" appropriate Federal Animal Welfare Regulations, and the Public Health Service "Policy on the Humane Care and Use of Laboratory Animals." This position, and all animal research personnel, are subject to internal compliance to SOM Animal Resource Center Standard Operating Procedures and to compliance regulations of the Animal Welfare Act, Public Health Service Policy, AAALAC guidelines, the State of Ohio Veterinary Practice Act, Federal Drug Enforcement Administration regulatory guidelines, US Food and Drug Administration Center for Veterinary Medicine regulations and other applicable regulatory guidelines.

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.