



BioFrontiers Institute
UNIVERSITY OF COLORADO BOULDER



LINDA CRNIC INSTITUTE
for DOWN SYNDROME

Request for Applications: *2023 Sie Post-Doctoral Fellowships in Down Syndrome Research*

Purpose

The Crnic Institute Boulder Branch (CBB) at CU Boulder's [BioFrontiers Institute](#) is issuing a call for applications to the **Sie Post-Doctoral Fellowships in Down Syndrome Research** program. **Sie Fellows** will work in a collaborative and interdisciplinary fashion on one of the CBB's research projects investigating molecular, cellular and systemic aspects of Trisomy 21 (T21) co-morbidities:

(1) The interconnections between muscle, bone, and blood phenotypes in T21

PIs: **Olwin, Ferguson, Allen, Brumbaugh**

T21 individuals frequently present with muscle weakness, reduced bone mass and strength, and diverse alterations on blood differentiation. Down syndrome mouse models and human biopsies will be used to further clarify the mechanisms and interactions that underly these phenotypes, with the ultimate goal of contributing to novel diagnostic and treatment strategies for people affected by these pathologies.

(2) The effects of sleep and exercise on T21 health

PIs: **Hoeffler, Allen, Olwin, Ferguson**

The Hoeffler lab recently established the role that RCAN1, a chromosome 21-encoded gene, plays in sleep/activity and circadian alterations observed in a Down syndrome mouse model and in individuals with Down syndrome. They will extend their studies towards the cellular and transcriptional mechanisms that modulate sleep and exercise in different mouse models and how these ultimately affect health and cognition.

(3) Tissue-based signs of inflammation and its implications in T21 pathophysiology

PIs: **Taatjes, Dowell, Ferguson, Brumbaugh, Hoeffler**

Interferon-mediated responses are hyperactivated in T21 tissues. The Taatjes and Dowell labs are actively studying the mechanisms that regulate Interferon-dependent transcription and its implications in the immune de-regulations seen in people with Down syndrome.

(4) De-regulated transcriptional and epigenetic networks in T21 tissues

PIs: **Dowell, Brumbaugh, Allen, Taatjes**

The Dowell lab leverages novel machine learning algorithms and nascent transcription assays to understand the widespread impact of T21 on dosage effects of transcription factor function and drug response, and on RNA degradation. The Brumbaugh lab is interested in the epigenetic mechanisms that drive stem cell differentiation in multiple tissues from mouse models of Down syndrome.

Groups from five different departments are participating in this work, including the [Allen](#), [Brumbaugh](#), [Dowell](#), [Ferguson](#), [Hoeffler](#), [Olwin](#), and [Taatjes](#) labs. We are building a Down syndrome research community in Boulder that will synergize with work from multiple groups at the main [Linda Crnic Institute for Down syndrome](#), CU Anschutz Medical Campus. **Sie Fellows** will leverage the BioFrontiers Institute strengths in interdisciplinary, collaborative research and cutting-edge technologies to enhance the Crnic Institute's mission to significantly improve the lives of people with Down syndrome through advanced biomedical research.

The **Sie Post-Doctoral Fellowships in Down Syndrome Research** program is made possible by a substantial gift from the **Anna and John J. Sie Foundation**, who are the founding donors of the Crnic Institute. The Crnic Institute is the first in the world to focus exclusively on research and medical care for people with Down syndrome. **John Sie** also serves on The BioFrontiers Institute Advisory Board and has financially contributed to the institute's development as a pioneer in using interdisciplinary science to improve human health.

Key Dates

Applications due	December 15, 2022
Decisions communicated to applicants	January 15, 2023
Funding begins	February 1, 2023 for current CU post-docs or at time of hire for external awardees

Award Information

The fellowship will provide up to three years of salary support and benefits. No budget required. No indirect costs are provided. The number of awards made will depend on the quantity and caliber of applications received.

Eligibility

Applicant must have a PhD or equivalent degree, and either be a post-doctoral associate in a CU Boulder lab affiliated with the Crnic Boulder Branch, as listed above, or must be hired into one of those labs. Faculty from affiliated labs are part of the fellowship review process, but fellowship awards to external candidates are contingent upon a successful hire into an affiliated CU Boulder lab.

Who We Are

The mission of the Crnic Boulder Branch is to understand the co-morbidities occurring with Down syndrome through a collaborative, interdisciplinary vision. The CBB is housed in The BioFrontiers Institute at CU Boulder and affiliated with the main Crnic Institute at the CU Anschutz Medical Campus, uniquely positioning it to draw on the strengths and resources of each institute. This includes advanced computational and imaging resources and an established interdisciplinary research community at BioFrontiers as well as extensive Down syndrome-specific resources and a patient community at AMC. As a synergistic partnership, we are committed to open sharing of data and materials. We also believe that a diverse research community is essential to achieving our scientific mission and are aligned with the CU Boulder Inclusion, Diversity, and Excellence in Academics Plan (<https://www.colorado.edu/odece/cu-boulder-diversity-plan>). Together, we will make positive, lasting impacts on the lives of people with Down syndrome.

Application Instructions

- Applications must be submitted by e-mail to cbb@colorado.edu
- Applications are due at 11:59 PM MST on December 15, 2022.
- Application components should be submitted as PDF documents and include:
 - **Research Statement** describing past work and your proposed intersection with one or more of the four research projects listed above. 3 pages maximum, not including references.
 - **CV or Biosketch** (NIH fellowship format).
 - **3 letters of recommendation** or contact information for 3 references who may be contacted on your behalf, one of which should be your graduate thesis advisor.

The CBB will keep all application components confidential.

Recipient Requirements

Sie Fellows are expected to become active members of the Crnic Institute. Fellows must agree to:

- Register as a Crnic Institute Member (information can be found at bit.ly/CrnicMember).
- Attend monthly Crnic Supergroup Meetings.
- Present a research progress report at the monthly Crnic Supergroup Meetings.
- Prepare a formal project presentation for future Down syndrome research symposiums.
- List both the BioFrontiers-Crnic Boulder Branch and the Linda Crnic Institute for Down Syndrome as an academic affiliation (in addition to their home department) on all publications emanating from the work supported by the fellowship.