

## Group Leader – Chromatin & Cancer Biology

**Note:** Applicants for this position **must** have a PhD and direct experience in cancer biology and/or chromatin research.

The Center for Physical Genomics and Engineering (CPGE) at Northwestern University, directed by Prof. Vadim Backman, is seeking a postdoctoral fellow or research (non-tenure track) faculty to lead a multidisciplinary team of scientists conducting cutting-edge research at the crossroads of biology, genomics, physics, engineering and medicine. Our main goal is to investigate fundamental biological questions and develop novel approaches relevant to the prevention, detection, diagnosis and treatment of cancer and other diseases at early, treatable stages. We have developed a platform of pioneering super-resolution and nano-sensing optical microscopy technologies which, combined with genome mapping and other functional genomic approaches, allow us to study the causal relationship between the nanoscale structure of chromatin, global patterns of gene expression, and their alteration in disease.

As evidenced by recent publications in *Nature Biomedical Engineering*, *Science Advances*, *PNAS*, *Cancer Research*, and *Scientific Reports*, CPGE undertakes systematic approaches to understanding carcinogenesis and cancer development by integrating molecular dynamics simulations, live-cell super-resolution nano-imaging, computational genomics, and genome mapping technologies. CPGE is a participant in two of the National Cancer Institute's U54 cancer research networks, with significant funding and recognition as both an NCI Center for Cancer Metastases Research (in collaboration with MIT) and an NCI Center for Cellular Cancer Biology Imaging. Additionally, the Center runs the first physical genomics training program in the United States, supported by an NIH T32 grant.

CPGE has received substantial sponsored and philanthropic support and provides a highly collaborative transdisciplinary environment populated by researchers with diverse backgrounds: biomedical engineering, molecular biology, computer science, biophysics, chemical engineering, etc. CPGE has collaborative projects with over 20 physicians, biomedical, and physical sciences investigators both internationally and domestically. Research projects reside within one or more priority areas: cancer biology, biophysics of the genome, or cancer therapeutics.

We are seeking a highly motivated, enthusiastic, and creative candidate with excellent interpersonal skills and a strong publication record. The successful candidate(s) will have the opportunity to conduct cutting-edge research integrating molecular biology, epigenetics, and computational genomics in a thriving multi-disciplinary team. It is anticipated that the successful candidate will engage in preparation of original manuscripts for conferences and peer-reviewed journals as well as participate in writing grant proposals.

### Specifically you will:

- Supervise and coordinate teams of graduate students and technicians working in the different areas of the research project.
- Manage ongoing collaborative projects and prepare timely progress reports.
- Analyze and integrate large datasets, including genomics and transcriptomics.

- Integrate molecular and physical aspects of genome function.
- Perform *ex vivo* and *in vitro* cell culture and *in vivo* animal studies.

## Qualifications

The Center seeks applicants with a strong background in cancer biology. Successful candidates will have a mixture of the following skills:

1. Degree:  
Ph.D. or M.D./Ph.D required, with proven experience in cancer biology research.
2. Prior Experience:
  - a) 3 years' experience in cancer biology or chromatin research is required.
  - b) Proficiency using standard biochemical, molecular, cellular, and functional genomic techniques is required.
  - c) Experience in single cell data analyses and integrative multi-omics approaches is highly desired.
  - d) Demonstrated technical capability in analyzing complex omics data, including transcriptomics, proteomics, and metabolomics, and differential analysis of multivariate datasets using common software tools.
  - e) High level of numeracy and knowledge of statistical analysis is highly desired.
  - f) Prior experience with optical imaging techniques is desired.
  - g) Prior experience with whole cell imaging and computational skills are preferred but not required.
  - h) Previous experience with systems biology approaches to integrating omics datasets into biological pathways/networks, i.e. biological network modelling is preferred but not required.
  - i) Programming experience (preferably in Matlab and/or Mathematica) is preferred but not required.
  - j) Experience working with mouse models is a plus.
3. Proven track record of working independently and demonstrating critical thinking, problem solving, attention to detail and creativity are essential.
4. Excellent prioritization and project management skills.
5. Strong communication and interpersonal skills and fluency in both spoken and written English.
6. A solid record of quality publications in peer-reviewed journals showing an output commensurate with opportunity.

Northwestern University offers outstanding benefits including health, dental and vision insurance, retirement matching, and competitive salary. Hiring is contingent upon eligibility to work in the United States. Qualified candidates should send a CV and cover letter to CPGE at [physicalgenomics@northwestern.edu](mailto:physicalgenomics@northwestern.edu).