

# Răzvan V. Chereji

## CONTACT

Section on Chromatin and Gene Expression  
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GitHub: [rchereji](https://github.com/rchereji)

## EDUCATION & RESEARCH

### **National Institutes of Health (NIH), Bethesda, MD, U.S.A.**

*Research Fellow*

**2016–present**

- National Institute of Child Health and Human Development (NICHD)
- Advisor: Dr. David J. Clark

### **National Institutes of Health (NIH), Bethesda, MD, U.S.A.**

*Visiting Fellow*

**2013–2016**

- National Institute of Child Health and Human Development (NICHD)
- Advisor: Dr. David J. Clark

### **Rutgers, The State University of New Jersey, Piscataway, NJ, U.S.A.**

*Ph.D.*

**2007–2013**

- Department: Physics
- Dissertation: “Statistical Mechanics of Nucleosomes”
- Committee: Profs. Alexandre V. Morozov (advisor), Anirvan M. Sengupta, Gyan Bhanot, Joel L. Lebowitz, and James R. Broach (outside member)
- Cumulative GPA: 3.90 / 4

### **Babeş-Bolyai University, Cluj-Napoca, CJ, Romania**

*B.Eng.*

**2002–2007**

- Department: Physics
- Thesis: “Differential Geometry in General Relativity and Yang-Mills Theory”
- Advisor: Professor Emil Vinteler
- Thesis GPA: 10 / 10
- Cumulative GPA: 9.83 / 10
- Graduated as valedictorian

## AWARDS

|   |                         |
|---|-------------------------|
| Fellows Award for Research Excellence (FARE award), NIH                   | <b>2017</b>             |
| Richard J. Plano Outstanding Teaching Assistant Award, Rutgers University | <b>2009</b>             |
| <b>Silver Medal</b> at the International Physics Olympiad, Indonesia      | <b>2002</b>             |
| Excellency Diploma awarded by the President of Romania                    | <b>2001, 2002</b>       |
| <b>Bronze Medal</b> at “Tuymaada” International Olympiad, Russia          | <b>2001</b>             |
| <b>First Prize</b> at Romanian National Physics Olympiad                  | <b>1999, 2000, 2002</b> |

## PUBLICATIONS

14. Johnson TA\*, **Chereji RV\***, Stavreva DA, Morris S, Hager GL, Clark DJ – Conventional and Pioneer Modes of Glucocorticoid Receptor Interaction with Enhancer Chromatin in vivo, *Nucleic Acids Res.*, gkx1044 (2017).

**\* These authors contributed equally**

13. **Chereji RV\***, Bharatula V\*, Elfving N, Blomberg J, Larsson M, Morozov AV, Broach JR, Björklund S – Mediator binds to boundaries of chromosomally interacting domains and to proteins involved in DNA looping, RNA metabolism, chromatin remodeling, and actin assembly, *Nucleic Acids Res.* 45 (15), 8806-8821 (2017).

**\* These authors contributed equally**

12. **Chereji RV\***, Ocampo J\*, Clark DJ – MNase-sensitive complexes in yeast: nucleosomes and non-histone barriers, *Molecular Cell* 65 (3), 565-577 (2017).

**\* These authors contributed equally**

11. Ocampo J\*, **Chereji RV\***, Eriksson PR, Clark DJ – The ISW1 and CHD1 ATP-dependent chromatin remodelers compete to set nucleosome spacing in vivo, *Nucleic Acids Res.* 44 (10), 4625-4635 (2016).

**\* These authors contributed equally**

10. Qiu H\*, **Chereji RV\***, Hu C, Cole HA, Rawal Y, Clark DJ, Hinnebusch AG – Genome-wide cooperation by HAT Gcn5, remodeler SWI/SNF, and chaperone Ydj1 in promoter nucleosome eviction and transcriptional activation, *Genome Res.* 26 (2), 211-225 (2016).

**\* These authors contributed equally**

9. **Chereji RV\***, Kan T-W\*, Grudniewska MK, Romashchenko AV, Berezikov E, Zhimulev IF, Guryev V, Morozov AV, Moshkin YM – Genome-wide profiling of nucleosome sensitivity and chromatin accessibility in *Drosophila melanogaster*, *Nucleic Acids Res.* 44 (3): 1036-1051 (2016).

**\* These authors contributed equally**

8. **Chereji RV**, Morozov AV – Functional roles of nucleosome stability and dynamics, *Brief. Funct. Genomics* 14 (1), 50-60 (2015).

7. Cole HA, Ocampo J, Iben JR, **Chereji RV**, Clark DJ – Transcription of Induced Genes in Yeast Correlates with Differential Loss of Histone H2A-H2B Dimers from Coding Regions, *Nucleic Acids Res.* 42 (20), 12512-12522 (2014).

6. Ganguli D\*, **Chereji RV\***, Iben JR, Cole HA, Clark DJ – RSC-dependent Constructive and Destructive Interference between Opposing Arrays of Phased Nucleosomes in Yeast, *Genome Res.* 24 (10), 1637-1649 (2014).

**\* These authors contributed equally**

5. **Chereji RV**, Morozov AV – Ubiquitous nucleosome crowding and unwrapping in the yeast genome, *Proc. Natl. Acad. Sci. USA* 111 (14), 5236-5241 (2014).

4. Elfving N\*, **Chereji RV\***, Bharatula V, Björklund S, Morozov AV, Broach JR – A dynamic interplay of nucleosome and Msn2 binding regulates kinetics of gene activation and repression following stress, *Nucleic Acids Res.* 42 (9), 5468-5482 (2014).

**\* These authors contributed equally**

3. Petrenko N, **Chereji RV**, McClean MN, Morozov AV, Broach JR – Noise and interlocking signaling pathways promote distinct transcription factor dynamics in response to different stresses, *Mol. Biol. Cell* 24 (12), 2045-2057 (2013).

2. **Chereji RV**, Morozov AV – Statistical mechanics of nucleosomes constrained by higher-order chromatin structure, *J. Stat. Phys.* 144 (2), 379-404 (2011).

1. **Chereji RV**, Tolkunov D, Locke G, Morozov AV – Statistical mechanics of nucleosome ordering by chromatin-structure-induced two-body interactions, *Phys. Rev. E* 83 (5), 050903 (2011).

SUBMITTED  
MANUSCRIPTS

1. **Chereji RV** – *plot2DO*: a tool to assess the quality and distribution of genomic data, Submitted.

2. **Chereji RV\***, Ramachandran S\*, Bryson TD, Henikoff S – Precise genome-wide mapping of single nucleosomes and linkers in vivo, Submitted.

**\* These authors contributed equally**

3. **Chereji RV**, Clark DJ – Determinants of nucleosome positioning, Submitted.

4. Hamdani O, Hsieh T-HS, Fujita T, Ocampo J, Kirkland JG, Lawrimore J, Kobayashi TJ, Friedman B, Fulton D, **Chereji RV**, Oki M, Bloom K, Clark DJ, Rando OJ, Kamakaka RT - Transfer RNA Genes Affect Chromosome Architecture and Function, Submitted.

5. Ouda R, Sarai N, Nehru V, Patel M, Debrosse M, Bachu M, **Chereji RV**, Clark DJ, Ozato K - SPT6 interacts with NSD2 and facilitates interferon induced transcription, Submitted.

6. Rawal Y\*, **Chereji RV\***, Valabhoju V, Qiu H, Ocampo J, Clark DJ, Hinnebusch AG – Gcn4 binding in coding regions can activate internal and canonical 5' promoters in yeast, Submitted.

**\* These authors contributed equally**

MANUSCRIPTS IN  
PREPARATION

1. **Chereji RV**, Clark DJ – The universality of nucleosome organization, from yeast to human, In preparation.

2. Rawal Y\*, **Chereji RV\***, Qiu H, Govind CK, Clark DJ, Hinnebusch AG – Chromatin remodeler SWI/SNF is required together with RSC to widen NDRs and evict promoter nucleosomes exclusively at highly transcribed genes in yeast, In preparation.

**\* These authors contributed equally**

3. Chang HW, Valieva ME, **Chereji RV**, Kulaeva OI, Feofanov AV, Morozov AV, Gurova K, Studitsky VM – Anti-cancer drugs curaxins remove FACT from transcribed genes, In preparation.

4. Clark S\*, **Chereji RV\***, Lee P, Fields D, Clark DJ - Chromatin structure of dorsal root ganglia neurons and cortical glia, In preparation.

**\* These authors contributed equally**

5. **Chereji RV** - Robust estimation of nucleosome spacing at the gene level, In preparation.

|                     |   |                 |
|---------------------|---|-----------------|
| INVITED TALKS       | 13 <sup>th</sup> Annual NICHD Fellows Meeting, Washington, DC   | <b>May 2017</b> |
|                     | Departmental Seminar, Physics Department, University of Minnesota, Minneapolis, MN                              | <b>Apr 2017</b> |
|                     | PGD Seminar, NIH, Bethesda, MD  | <b>Jan 2017</b> |
|                     | Departmental Seminar, Department of Computational and Systems Biology, University of Pittsburgh, Pittsburgh, PA | <b>Dec 2016</b> |
|                     | Departmental Seminar, Department of Biological Sciences, Carnegie Mellon University, Pittsburgh, PA             | <b>Dec 2016</b> |
|                     | Biophysics Seminar, Physics Department, University of Minnesota, Minneapolis, MN                                | <b>Nov 2016</b> |
|                     | PGD Seminar, NIH, Bethesda, MD  | <b>Jan 2016</b> |
|                     | PGD Seminar, NIH, Bethesda, MD  | <b>May 2015</b> |
|                     | Chromatin-DECODE Seminar, NIH, Bethesda, MD   | <b>Apr 2015</b> |
|                     | APS March Meeting, San Antonio, TX (invited talk + contributed talk)  | <b>Mar 2015</b> |
|                     | PGD Seminar, NIH, Bethesda, MD  | <b>Jun 2014</b> |
|                     | BioMaPS Institute for Quantitative Biology Student Seminar, Rutgers University, Piscataway, NJ                  | <b>Sep 2013</b> |
|                     | David Clark laboratory invited talk, NIH, Bethesda, MD  | <b>Jun 2013</b> |
|                     | Jun Song laboratory invited talk, UCSF, San Francisco, CA   | <b>Jun 2013</b> |
| OTHER PRESENTATIONS | Workshop on Chromosome Biology, Bethesda, MD (contributed talk)   | <b>Dec 2017</b> |
|                     | Washington Area Yeast Club Meeting, Bethesda, MD (contributed talk)   | <b>Nov 2017</b> |
|                     | NICHD Scientific Retreat, NIH, Bethesda, MD (poster)  | <b>Sep 2017</b> |
|                     | CSHL Mechanisms of Eukaryotic Transcription Meeting, Cold Spring Harbor, NY (poster)                            | <b>Aug 2017</b> |
|                     | APS March Meeting, New Orleans, LA (contributed talk)   | <b>Mar 2017</b> |
|                     | Biophysical Society 61 <sup>st</sup> Annual Meeting, New Orleans, LA (poster)                                   | <b>Feb 2017</b> |
|                     | NCI Symposium on Chromosome Biology, NIH, Bethesda, MD (poster)   | <b>Nov 2016</b> |
|                     | CSHL Epigenetics & Chromatin Meeting, Cold Spring Harbor, NY (poster)   | <b>Sep 2016</b> |
|                     | NICHD Scientific Retreat, NIH, Bethesda, MD (poster)  | <b>Sep 2016</b> |
|                     | 12 <sup>th</sup> Annual NICHD Fellows Meeting, Washington, DC (poster)  | <b>Apr 2016</b> |
|                     | APS March Meeting, Baltimore, MD (contributed talk)   | <b>Mar 2016</b> |
|                     | Biophysical Society 60 <sup>th</sup> Annual Meeting, Los Angeles, CA (poster)                                   | <b>Feb 2016</b> |
|                     | NIH Research Festival, NIH, Bethesda, MD (poster)   | <b>Sep 2015</b> |
|                     | 34 <sup>th</sup> Summer Symposium in Molecular Biology, Penn State University, State College, PA (poster)       | <b>Jul 2015</b> |
|                     | FASEB conference: Transcription, Chromatin, and Epigenetics,  |                 |

|  |                 |
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| Palm Beach, FL (poster)  | <b>Jun 2015</b> |
| 11 <sup>th</sup> Annual NICHD Fellows Meeting, Washington, DC (poster)   | <b>May 2015</b> |
| NCI Symposium on Chromosome Biology, NIH, Bethesda, MD (poster)  | <b>Apr 2015</b> |
| Keystone Symposia: DNA Methylation / Epigenomics, Keystone, CO (poster)  | <b>Mar 2015</b> |
| Biophysical Society 59 <sup>th</sup> Annual Meeting, Baltimore, MD (poster)  | <b>Feb 2015</b> |
| CSHL Epigenetics & Chromatin Meeting, Cold Spring Harbor, NY (poster)  | <b>Sep 2014</b> |
| NICHD Scientific Retreat, NIH, Bethesda, MD (poster)   | <b>Jun 2014</b> |
| 10 <sup>th</sup> Annual NICHD Fellows Meeting, Washington, DC (poster)   | <b>Apr 2014</b> |
| APS March Meeting, Denver, CO (contributed talk)   | <b>Mar 2014</b> |
| Biophysical Society 58 <sup>th</sup> Annual Meeting, San Francisco, CA (poster)                                    | <b>Feb 2014</b> |
| APS March Meeting, Baltimore, MD (contributed talk)  | <b>Mar 2013</b> |
| Biophysical Society 57 <sup>th</sup> Annual Meeting, Philadelphia, PA (poster)                                     | <b>Feb 2013</b> |
| 108 <sup>th</sup> Statistical Mechanics Conference, Rutgers University, Piscataway, NJ (contributed talk)          | <b>Dec 2012</b> |
| The 8 <sup>th</sup> Gotham-Metro Condensed Matter Meeting, The New York Academy of Sciences, New York, NY (poster) | <b>Nov 2012</b> |
| Biophysical Society Pennsylvania Network Meeting, Lehigh University, Bethlehem, PA (poster)                        | <b>Sep 2012</b> |

## PROFESSIONAL ACTIVITIES

### Reviewer

- Independent:
  - Science
  - Biophysical Journal
  - Nucleic Acids Research
  - Epigenetics & Chromatin
  - Scientific Reports
  - Epigenetics
  - PLoS ONE
  - Genomics
  - Journal of Biomolecular Structure & Dynamics
- Jointly with my advisor:
  - Nature
  - Molecular Cell
  - Genome Research

### Service

- Member of the Chromatin-DECODE seminar committee **2016–present**
- Member of the DDB Fellows' seminar committee **2015–present**
  - Chair **2016–2017**
  - Co-chair **2015–2016**

**Member**

- American Physical Society, Biophysical Society

|                        |                                |                    |
|------------------------|--------------------------------|--------------------|
| TEACHING<br>EXPERIENCE | General Physics II             | <b>Summer 2012</b> |
|                        | General Physics II             | <b>Summer 2010</b> |
|                        | Extended Analytical Physics II | <b>Spring 2010</b> |
|                        | Extended Analytical Physics I  | <b>Fall 2009</b>   |
|                        | General Physics II             | <b>Summer 2009</b> |
|                        | Extended Analytical Physics II | <b>Spring 2009</b> |
|                        | Extended Analytical Physics I  | <b>Fall 2008</b>   |

|              |   |                  |
|--------------|---|------------------|
| SCHOLARSHIPS | Graduate Assistantship, Rutgers University            | <b>2010–2013</b> |
|              | Teaching Assistantship, Rutgers University            | <b>2008–2010</b> |
|              | Excellence Fellowship, Rutgers University             | <b>2007–2008</b> |
|              | University Merit Scholarship, Babeş-Bolyai University | <b>2002–2007</b> |
|              | Romanian Ministry of Education Scholarship            | <b>2002–2007</b> |
|              | “Petrom” Scholarship, OMV Petrom S.A.                 | <b>2002–2007</b> |

|             |   |                 |
|-------------|---|-----------------|
| TEST SCORES | Ph.D. Candidacy Examination, overall percentage: <b>89.1%</b> | <b>Aug 2008</b> |
|             | GRE Subject: Physics, score: <b>990 / 990</b>                 | <b>Nov 2006</b> |

**TECHNICAL SKILLS****Programming/Scripting Languages**

- Currently used: MATLAB, R, Python, Bash
- Used in the past: Basic, C, Fortran, FoxPro, Pascal

**Genomic Data Analysis**

- ATAC-seq, Chemical cleavage mapping, ChIP-exo, ChIP-seq, DNase-seq, FAIRE-seq, MNase-seq, NET-seq, RNA-seq

**Other skills**

- Chimera,  $\text{\LaTeX}$ , Illustrator, InDesign, Dreamweaver

**REFERENCES**

**David J. Clark** (Post-doctoral advisor)  
Senior Investigator, Division of Developmental Biology,  
NICHD, National Institutes of Health  
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**Alexandre V. Morozov** (Ph.D. advisor)  
Associate Professor

Department of Physics & Astronomy  
Rutgers, The State University of New Jersey  
136 Frelinghuysen Road  
Piscataway, NJ 08854-8019, USA  
Phone: 848-445-1387  
Fax: 732-445-4320  
E-mail: morozov@physics.rutgers.edu

**Alan G. Hinnebusch**

Chief, Section on Nutrient Control of Gene Expression  
Program in Cellular Regulation and Metabolism, NICHD  
National Institutes of Health  
Building 6, Room 230  
Bethesda, MD 20892, USA  
Phone: 301-496-4480  
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**James R. Broach**

Professor and Chair, Department of Biochemistry and Molecular Biology  
Director, Penn State Hershey Institute for Personalized Medicine  
Penn State College of Medicine  
500 University Drive  
Hershey, PA 17033-0858, USA  
Phone: 717-531-8586  
Fax: 717-531-7072  
E-mail: jbroach@pennstatehealth.psu.edu

**Steven Henikoff**

Member, Fred Hutchinson Cancer Research Center  
Investigator, Howard Hughes Medical Institute  
Professor, University of Washington, School of Medicine  
1100 Fairview Ave. N  
Seattle, WA 98109-1024, USA  
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**Gordon L. Hager**

Chief, Laboratory of Receptor Biology and Gene Expression  
Head, Hormone Action and Oncogenesis Section  
Center for Cancer Research, NCI, NIH  
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