

# Răzvan V. Chereji

## CONTACT

Section on Chromatin and Gene Expression  
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## EDUCATION

### **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 Vințeler
- Thesis GPA: 10 / 10
- Cumulative GPA: 9.83 / 10
- Graduated as valedictorian

## AWARDS

Fellows Award for Research Excellence (FARE award), NIH	<b>2017, 2018</b>
"Outstanding Contribution in Reviewing" award from Genomics, Elsevier	<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

19. Rawal Y\*, **Chereji RV\***, Qiu H, Ananthakrishnan S., Chhabi G., Clark DJ, Hinnebusch AG – SWI/SNF and RSC cooperate to reposition and evict promoter nucleosomes at highly expressed genes in yeast, *Genes Dev.* 32 (9-10), 695-710 (2018).
18. Ouda R, Sarai N, Nehru V, Patel MC, Debrosse M, Bachu M, **Chereji RV**, Eriksson PR, Clark DJ, Ozato K - SPT6 interacts with NSD2 and facilitates interferon-induced transcription, *FEBS Lett.* 592(10), 1681-1692 (2018).
17. **Chereji RV<sup>†</sup>**, Clark DJ<sup>†</sup> – Major determinants of nucleosome positioning, *Biophys. J.* 114 (10), 2279-2289 (2018).
16. 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, *Mol. Cell* 70 (2), 297-311 (2018).
15. **Chereji RV\***, Ramachandran S\*, Bryson TD, Henikoff S – Precise genome-wide mapping of single nucleosomes and linkers in vivo, *Genome Biol.* 19, 19 (2018).
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.* 46 (1), 203-214 (2018).
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).
12. **Chereji RV\***, Ocampo J\*, Clark DJ – MNase-sensitive complexes in yeast: nucleosomes and non-histone barriers, *Mol. Cell* 65 (3), 565–577 (2017).
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).
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).
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).
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).

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\*These authors contributed equally

<sup>†</sup>Co-corresponding authors

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).
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).
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

1. **Chereji RV\***, Eriksson PR\*, Ocampo J\*, Clark DJ – DNA accessibility is not the primary determinant of chromatin-mediated gene regulation, Submitted.
2. Ocampo J\*, **Chereji RV\***, Eriksson PR, Clark DJ – Contrasting roles of the RSC and ISW1/CHD1 chromatin remodelers in RNA polymerase II elongation and termination, Submitted.
3. Mehta GD, Ball DA, Eriksson PR, **Chereji RV**, Clark DJ, McNally JG, Karpova TS - Chromatin Remodeler RSC2 Modulates Binding of the Transcriptional Activator Ace1p and Improves the Transcription of CUP1 by Fast Cycles of Remodeling, Submitted.
4. Chang HW, Valieva ME, Safina A, **Chereji RV**, Wang J, Kulaeva OI, Morozov AV, Kirpichnikov MP, Feofanov AV, Gurova K, Studitsky VM – Mechanism of FACT Removal from Transcribed Genes by Anti-Cancer Drugs Curaxins, Submitted.
5. **Chereji RV** – *plot2DO*: a tool to assess the quality and distribution of genomic data, Submitted.
6. 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.

#### IN PREPARATION

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

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\*These authors contributed equally

2. 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**

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

#### INVITED TALKS

<b>Keynote Speaker</b> at The 3 <sup>rd</sup> International Conference on Molecular Biology & Nucleic Acids, Toronto, Canada	<b>Aug 2018</b>
Biowulf Seminar Series, NIH, Bethesda, MD	<b>Mar 2018</b>
Biophysical Society 62 <sup>st</sup> Annual Meeting, San Francisco, CA	<b>Feb 2018</b>
PGD Seminar, NIH, Bethesda, MD	<b>Jan 2018</b>
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, NIH, Bethesda, MD	<b>Jun 2013</b>
Jun Song laboratory, UCSF, San Francisco, CA	<b>Jun 2013</b>

#### OTHER PRESENTATIONS

CSHL Epigenetics & Chromatin Meeting, Cold Spring Harbor, NY (poster)	<b>Sep 2018</b>
NICHD Scientific Retreat, NIH, Bethesda, MD (poster)	<b>Sep 2018</b>
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, 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
  - Nature Communications
  - Biophysical Journal
  - Nucleic Acids Research
  - Cell Reports
  - Epigenetics & Chromatin
  - Scientific Reports
  - Epigenetics
  - PLoS ONE
  - Genomics
  - Journal of Biomolecular Structure & Dynamics
- Jointly with my advisor: Nature, Molecular Cell, Genome Research

### Service

- Biophysical Society 62<sup>nd</sup> Annual Meeting **2018**
  - Chair of the "Chromatin and the Nucleoid" session
- 3<sup>rd</sup> International Conference on Molecular Biology & Nucleic Acids **2018**
  - Chair of the "Carcinogenesis, Gene Targets and Pathways" session
- Member of the DDB Fellows' seminar committee **2015-present**
  - Chair **2016-2017**
  - Co-chair **2015-2016**
- Member of the Chromatin-DECODE seminar committee **2016-present**

### Member

- American Physical Society, Biophysical Society

## TEACHING 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/Octave, Python, R, 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,  $\LaTeX$ , Illustrator, InDesign, Dreamweaver

## REFERENCES

### **David J. Clark** (Post-doctoral advisor)

Senior Investigator, Division of Developmental Biology  
NICHD, National Institutes of Health  
Building 6A Room 2A02  
Bethesda, MD 20892, USA  
Phone: 301-496-6966  
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E-mail: clarkda@mail.nih.gov

### **Alexandre V. Morozov** (Ph.D. advisor)

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

### **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  
Phone: 206-667-4515  
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### **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  
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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  
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**Gordon L. Hager**

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Head, Hormone Action and Oncogenesis Section  
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