

Răzvan V. Chereji

CONTACT

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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
- 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	2017, 2018
“Outstanding Contribution in Reviewing” award from Genomics, Elsevier	2017
Richard J. Plano Outstanding Teaching Assistant Award, Rutgers University	2009
Silver Medal at the International Physics Olympiad, Indonesia	2002
Excellency Diploma awarded by the President of Romania	2001, 2002
Bronze Medal at “Tuymaada” International Olympiad, Russia	2001
First Prize at Romanian National Physics Olympiad	1999, 2000, 2002

PUBLICATIONS

23. 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, *Genome Res.* (2019), doi: 10.1101/gr.242032.118
22. Hamdani O, Dhillon N, Hsieh T-HS, Fujita T, Ocampo J, Kirkland JG, Lawrimore J, Kobayashi TJ, Friedman B, Fulton D, Wu KY, **Chereji RV**, Oki M, Bloom K, Clark DJ, Rando OJ, Kamakaka RT - Transfer RNA Genes Affect Chromosome Architecture and Function via Local Effects, *Mol. Cell. Biol.* (2019), doi: 10.1128/MCB.00432-18
21. 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, *Science Advances* 4 (11), eaav2131 (2018).
20. Mehta GD, Ball DA, Eriksson PR, **Chereji RV**, Clark DJ, McNally JG, Karpova TS - Single-Molecule Analysis Reveals Linked Cycles Of RSC Chromatin Remodeling and Ace1p Transcription Factor Binding in Yeast, *Mol. Cell* 72 (5), 875-887.e9 (2018).
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**[†], Clark DJ[†] – Major determinants of nucleosome positioning, *Bio-phys. 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).

*These authors contributed equally

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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).
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**, Bryson TD, Henikoff S – Quantitative MNase-seq accurately maps nucleosome occupancy levels, In revision.
2. **Chereji RV***, Eriksson PR*, Ocampo J*, Clark DJ – DNA accessibility is not the primary determinant of chromatin-mediated gene regulation, In revision.

IN PREPARATION

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

*These authors contributed equally

2. **Chereji RV** – Robust estimation of nucleosome spacing at the gene level, In preparation.
3. Clark S, **Chereji RV**, Lee P, Fields D, Clark DJ – Chromatin structure of dorsal root ganglia neurons and cortical glia, In preparation.

BOOK CHAPTERS

1. Beati P*, **Chereji RV***[†] – Use of *plot2DO* for creating 2D occupancy plots, Invited chapter in Methods in Molecular Biology, Submitted.

INVITED TALKS

Workshop, IMPaM CONICET-UBA Institute, Buenos Aires, Argentina	Nov 2018
Seminar, "Dr. Héctor N. Torres" Institute, Buenos Aires, Argentina	Nov 2018
Keynote Speaker at The 3 rd International Conference on Molecular Biology & Nucleic Acids, Toronto, Canada	Aug 2018
Biowulf Seminar Series, NIH, Bethesda, MD	Mar 2018
Biophysical Society 62 nd Annual Meeting, San Francisco, CA	Feb 2018
13 th Annual NICHD Fellows Meeting, Washington, DC	May 2017
Departmental Seminar, Physics Department, University of Minnesota, Minneapolis, MN	Apr 2017
Departmental Seminar, Department of Computational and Systems Biology, University of Pittsburgh, Pittsburgh, PA	Dec 2016
Departmental Seminar, Department of Biological Sciences, Carnegie Mellon University, Pittsburgh, PA	Dec 2016
Biophysics Seminar, Physics Department, University of Minnesota, Minneapolis, MN	Nov 2016
Chromatin-DECODE Seminar, NIH, Bethesda, MD	Apr 2015
APS March Meeting, San Antonio, TX (invited talk + contributed talk)	Mar 2015
BioMaPS Institute for Quantitative Biology Student Seminar, Rutgers University, Piscataway, NJ	Sep 2013
David Clark laboratory, NIH, Bethesda, MD	Jun 2013
Jun Song laboratory, UCSF, San Francisco, CA	Jun 2013

OTHER PRESENTATIONS

Biophysical Society 63 rd Annual Meeting, Baltimore, MD (poster)	Mar 2019
PGD Monday AM Seminar, NIH, Bethesda, MD	Dec 2018
CSHL Epigenetics & Chromatin Meeting, Cold Spring Harbor, NY (poster)	Sep 2018
NICHD Scientific Retreat, NIH, Bethesda, MD (poster)	Sep 2018
PGD Monday AM Seminar, NIH, Bethesda, MD	Jan 2018
Workshop on Chromosome Biology, Bethesda, MD (contributed talk)	Dec 2017

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Washington Area Yeast Club Meeting, Bethesda, MD (contributed talk)	Nov 2017
NICHD Scientific Retreat, NIH, Bethesda, MD (poster)	Sep 2017
CSHL Mechanisms of Eukaryotic Transcription Meeting, Cold Spring Harbor, NY (poster)	Aug 2017
APS March Meeting, New Orleans, LA (contributed talk)	Mar 2017
Biophysical Society 61 st Annual Meeting, New Orleans, LA (poster)	Feb 2017
PGD Monday AM Seminar, NIH, Bethesda, MD	Jan 2017
NCI Symposium on Chromosome Biology, NIH, Bethesda, MD (poster)	Nov 2016
CSHL Epigenetics & Chromatin Meeting, Cold Spring Harbor, NY (poster)	Sep 2016
NICHD Scientific Retreat, NIH, Bethesda, MD (poster)	Sep 2016
12 th Annual NICHD Fellows Meeting, Washington, DC (poster)	Apr 2016
APS March Meeting, Baltimore, MD (contributed talk)	Mar 2016
Biophysical Society 60 th Annual Meeting, Los Angeles, CA (poster)	Feb 2016
PGD Monday AM Seminar, NIH, Bethesda, MD	Jan 2016
NIH Research Festival, NIH, Bethesda, MD (poster)	Sep 2015
34 th Summer Symposium in Molecular Biology, Penn State University, State College, PA (poster)	Jul 2015
FASEB conference: Transcription, Chromatin, and Epigenetics, Palm Beach, FL (poster)	Jun 2015
11 th Annual NICHD Fellows Meeting, Washington, DC (poster)	May 2015
PGD Monday AM Seminar, NIH, Bethesda, MD	May 2015
NCI Symposium on Chromosome Biology, NIH, Bethesda, MD (poster)	Apr 2015
Keystone Symposia: DNA Methylation / Epigenomics, Keystone, CO (poster)	Mar 2015
Biophysical Society 59 th Annual Meeting, Baltimore, MD (poster)	Feb 2015
CSHL Epigenetics & Chromatin Meeting, Cold Spring Harbor, NY (poster)	Sep 2014
NICHD Scientific Retreat, NIH, Bethesda, MD (poster)	Jun 2014
PGD Monday AM Seminar, NIH, Bethesda, MD	Jun 2014
10 th Annual NICHD Fellows Meeting, Washington, DC (poster)	Apr 2014
APS March Meeting, Denver, CO (contributed talk)	Mar 2014
Biophysical Society 58 th Annual Meeting, San Francisco, CA (poster)	Feb 2014
APS March Meeting, Baltimore, MD (contributed talk)	Mar 2013
Biophysical Society 57 th Annual Meeting, Philadelphia, PA (poster)	Feb 2013
108 th Statistical Mechanics Conference, Rutgers University, Piscataway, NJ (contributed talk)	Dec 2012
The 8 th Gotham-Metro Condensed Matter Meeting,	

PROFESSIONAL ACTIVITIES

The New York Academy of Sciences, New York, NY (poster)

Nov 2012

Biophysical Society Pennsylvania Network Meeting,

Lehigh University, Bethlehem, PA (poster)

Sep 2012

Reviewer

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

Service

- Biophysical Society 62nd Annual Meeting **2018**
 - Chair of the "Chromatin and the Nucleoid" session
- 3rd 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	Summer 2012
General Physics II	Summer 2010
Extended Analytical Physics II	Spring 2010
Extended Analytical Physics I	Fall 2009
General Physics II	Summer 2009
Extended Analytical Physics II	Spring 2009
Extended Analytical Physics I	Fall 2008

SCHOLARSHIPS

Graduate Assistantship, Rutgers University	2010-2013
Teaching Assistantship, Rutgers University	2008-2010
Excellence Fellowship, Rutgers University	2007-2008
University Merit Scholarship, Babeş-Bolyai University	2002-2007
Romanian Ministry of Education Scholarship	2002-2007
"Petrom" Scholarship, OMV Petrom S.A.	2002-2007

TEST SCORES

Ph.D. Candidacy Examination, overall percentage: **89.1%**
GRE Subject: Physics, score: **990 / 990**

Aug 2008
Nov 2006

TECHNICAL SKILLS

Programming/Scripting Languages

- Currently used: Python, R, MATLAB/Octave, 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

Alexandre V. Morozov (Ph.D. advisor)
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Director, Center for Quantitative Biology
Rutgers University
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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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Alan G. Hinnebusch
Chief, Section on Nutrient Control of Gene Expression
Program in Cellular Regulation and Metabolism,
NICHD, National Institutes of Health

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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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Hershey, PA 17033-0858, 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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