

**Rais Ahmad Ganai, Ph.D.**  
Scientist –D/Assistant Professor,  
Watson-Crick Centre for Molecular Medicine,  
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**Education and Research Experience:**

**Postdoctoral Fellow, 2015 - 2018**

Howard Hughes Medical Institute  
Department of Biochemistry and Molecular Pharmacology  
NYU Langone School of Medicine  
New York, USA – 10016

**PhD Student, 2009- 2015**

Dept. of Medical Biochemistry and Biophysics  
Umeå University  
Sweden – 90187

**Junior Research Fellow, 2007-2008**

Dept. of Microbiology and Cell Biology  
Indian Institute of Science  
Bangalore, India – 560012

**M. Sc. Biotechnology, 2004-2006**

University of Kashmir  
India – 190006

**Research Experience:**

**1. Howard Hughes Medical Institute, Department of Biochemistry and Molecular Pharmacology, NYU Langone School of Medicine, New York, USA**

**Advisor:** Prof. Danny Reinberg

“Role of Polycomb repressive complex in mouse embryonic stem cell maintenance and differentiation”

**2. Medical Biochemistry and Biophysics, Umeå University, Sweden**

**Advisor:** Prof. Erik Johansson

“DNA polymerases in DNA replication and repair”

**3. Dept. of Microbiology and Cell Biology, Indian Institute of Science, Bangalore, India (2007-2008)**

**Advisor:** Prof. Umesh Varshney

“Role of Ribosome recycling factor (RRF), Release factor 2 (RF2) and Release factor 3 (RF3) in recycling of pre-termination and post-termination ribosomal complexes”

**4. Indian Institute of Integrative Medicine Jammu, (CSIR), India. (M. Sc. thesis project)**

**Advisor:** Dr. Zabeer Ahmed

“Effect of natural products on the release of pro inflammatory cytokines”

**Publications:**

1. Structural basis for processive polymerization by yeast DNA polymerase epsilon  
Matthew Hogg, Pia Osterman, Göran Bylund, **Rais A. Ganai**, Else-Britt Lundstrom, Elisabeth Sauer-Ericksson and Erik Johansson  
*Nature Structural and Molecular Biology*, 21, 49–55 (2014), (***Impact factor: 15.36***)

This publication was highlighted by a News & Views article in Nat. Struct. Mol. Biology  
Commentary: Look Ma, no PCNA: how DNA polymerase  $\epsilon$  synthesizes long stretches of DNA  
without a processivity factor Nat. Struct. Mol. Biol. 21, 12–14 (2014)

2. DNA Replication – A Matter of Fidelity  
**Rais A. Ganai** and Erik Johansson  
*Molecular Cell*, 62: 745–755 (2016) (***Impact factor: 17.97***)
3. Switching between polymerase and exonuclease sites in DNA polymerase epsilon  
**Rais A. Ganai**, Göran Bylund and Erik Johansson  
*Nucleic Acids Research* 43:932-942 (2015) (***Impact factor: 16.97***)
4. Strand displacement synthesis properties of DNA polymerase epsilon  
**Rais A. Ganai**, Xiao-Ping Zhang, Wolf-Dietrich Heyer and Erik Johansson  
*Nucleic Acids Research*, 43:932-942 (2015) (***Impact factor: 16.97***)
5. Yeast DNA polymerase epsilon catalytic core and holoenzyme have comparable catalytic rates  
**Rais A. Ganai**, Pia Osterman and Erik Johansson  
*Journal of Biological Chemistry* 290:3825-3855 (2015) (***Impact factor: 5.15***)
6. Distinct Stimulatory Mechanisms Regulate the Catalytic Activity of Polycomb Repressive Complex 2.  
Lee CH, Holder M, Grau D, Saldaña-Meyer R, **Rais A. Ganai**, Zhang J, Wang M, LeRoy G, Dobenecker M, Reinberg D, Armache KJ.  
*Molecular Cell*, 3;70(3):435-448 (2018) (***Impact factor: 17.97***)

7. LEDGF and HDGF2 relieve the nucleosome-induced barrier to transcription in differentiated cells.  
G. LeRoy, O. Oksuz, N. Descostes, Y. Aoi, **R. A. Ganai**, H. O. Kara, J.-R. Yu, C.-H. Lee, J. Stafford, A. Shilatifard, D. Reinberg,  
*Sci. Adv.* 5, eaay3068 (2019) (***Impact factor: 14.13***)
8. Interplay between Polycomb repressive complex 1 and 2 for recruitment to chromatin in mouse embryonic stem cells.  
Ozgur Oksuz\*, **Rais A Ganai**\*, Jefferson Grant and Danny Reinberg (will be submitted to ***Genes and Development***, ***Impact factor: 9.5***) \*equal contribution
9. Functional collaboration between Pol epsilon and Pol eta in bypassing an 8-oxodGTP lesion.  
**Rais A. Ganai**, Peter Burgers and Erik Johansson (Manuscript)
10. Recycling of ribosomal complexes stalled at the step of elongation in *Escherichia coli*.  
N. S. Singh, **Rais Ahmad**, R Sangeetha and Varshney U  
*Journal of Molecular Biology* 380, 451-464 (2008) (***Impact factor: 5.76***)
11. Crowding, molecular volume and plasticity: An assessment involving crystallography, NMR and simulations.  
Selvaraj M, **Rais Ahmad**, Varshney U and Vijayan M  
*Journal of Bioscience. Dec;37 (6):953-63 (2012)* (***Impact factor: 2.06***)
12. Structures of new crystal forms of *Mycobacterium tuberculosis* peptidyl-tRNA hydrolase and functionally important plasticity of the molecule.  
Selvaraj M, **Rais Ahmad**, Varshney U and Vijayan M  
*Acta Crystallogr Sect F Struct Biol Cryst Commun* 1;68 (2012) (***Impact factor: 1.05***)

### **Honors and Scholarships:**

- Awarded three-year core research grant by SERB-DST for studying the role of replicative polymerases in maintenance of genomic integrity (**50 Lakh**).
- Awarded three-year grant by ICMR for studying the dysregulation of Polycomb repressive complexes in Prostate cancers (**45 Lakh**).
- Awarded Ramanujan fellowship by DST-SERB, India (**₹ 1.1 Crore**)
- Awarded three-year international postdoctoral fellowship from Swedish Research Council (Vetenskapsrådet) for the fulfilment of my postdoctoral period in USA. My application was rated **Outstanding (₹2.5 Crore)**.
- Awarded two-year International Postdoctoral fellowship from Swedish Society for Medical Research (SSMF) for the fulfilment of my postdoctoral period in USA (**₹60 Lakhs tax free salary**). In addition, a research startup grant of ₹ 20 lakhs plus salary.

- Awarded best poster prize at conference held by Swedish Society for Biophysics, Biochemistry and Molecular Biology, Tällberg, Sweden (2014).
- Qualified Graduate Aptitude Test in Engineering (GATE) 2007.
- Recipient of PhD fellowship from SJCKMS Kempes Foundation, Sweden.
- Recipient of conference travel grants from Kempe Foundation, Sweden.

### **Memberships:**

- Member of Swedish Society for Biophysics, Biochemistry and Molecular Biology
- Founding chairman of “Kashir Scientist”-a science outreach organization

### **Conferences:**

- Presented my work at symposium “Cutting edge biomolecular science” held at Tällberg, Sweden (2014) (Talk and Poster)
- Presented a poster entitled “Influence of Accessory subunits on the biochemical properties of DNA polymerase epsilon” at conference Genome Instability, Evolution and Human Diseases, Saint Petersburg, Russia (2013) (Poster)
- Presented my work at “Chromosome stability” meeting held at Karolinska Institute, Sweden (2013) (Talk)
- Presented my work at symposium organized by Swedish Society for Biochemistry, Biophysics and Molecular Biology, Tällberg, (2012) (Talk).
- Participated in conference “Enzymes in nucleic acid synthesis” Hemavan, Sweden (2009)

### **References:**

1. **Prof. Erik Johansson**  
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Umeå University,  
Sweden - 90187  
Phone: +46907866638  
E-mail: [erik.tm.johansson@umu.se](mailto:erik.tm.johansson@umu.se)
2. **Prof. Umesh Varshney**  
Dept. of Microbiology and Cell Biology,  
Indian Institute of Science,  
India- 560012.  
Phone: +918022932686  
E-mail: [varshney@mcbl.iisc.ernet.in](mailto:varshney@mcbl.iisc.ernet.in)